DOMESTIC ENGINEERING

A Weekly Record of Progress in Plumbing, Heating, Ventilation and all Matters Pertaining to Domestic Sanitation.

ESTABLISHED 1889

Whole No. 1146. CHICAGO, NOVEMBER 28, 1914. Vol. 69, No. 9.

PUBLISHED ON SATURDAY OF EACH WEEK BY THE
DOMESTIC ENGINEERING COMPANY
445-447 Plymouth Court, Chicago.

Address all Correspondence to Chicago Office.
Long Distance Telephone: Harrison 951.
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TERMS OF SUBSCRIPTION.
United States, Cuba and Mexico, $2.00 per year.
Canada, $3.00 per year. Foreign, $4.00 per year.
Current Copies, 10c each. Back numbers, 25c each.

Entered as Second-Class Matter at the Postoffice at Chicago, Ill.

COMMENTS OF THE TRADE RELATIVE TO A HEATING ORDINANCE.

THE menace of the tramp steamfitter and the need of a municipal heating regulation was strikingly illustrated within recent weeks when the newspapers reported the explosion of a heating boiler and the death of one man and the serious injury of another in the basement of an undertaking establishment in Chicago. The heating plant in this building was being changed from a hot water system to a steam heating one and the work, it is said, was being done without a permit, and by an alleged irresponsible Jack-of-all-Trades.

Since the publication of our editorial relative to a proposed heating ordinance many letters have been received bearing on the subject from heating engineers throughout the country. From the tenor of these communications it is clearly evident that the majority feel that the trade needs some kind of protection from the dishonest and inefficient floaters, etc.

Some of these letters suggest that a heating ordinance should provide for the licensing of all who are engaged in the heating profession. Such a clause, it is contended, would have a strong tendency to automatically eliminate from the trade many, if not all, the "skin" and "fly-by-night" contractors.

Other letters express doubt and are inclined to believe that such an ordinance would not eliminate the existing evils, and would not assist the contractor who enjoys a reputation for high class work. Some of the comments in brief are interesting.

E. Lippe, a well-known heating and ventilating engineer of Chicago, writes as follows: "It was with a great deal of satisfaction that I read your editorial on 'The Need of a Heating Ordinance.' It is really a misfortune that such an ordinance has not been put into effect in Chicago long ago. Conversation with numerous architects, engineers, contractors and steamfitters leads me to state that no opposition would be voiced by any man connected directly or indirectly with the heating profession."

L. H. Prentice, of Chicago, writes: "I do not believe such an ordinance would benefit the trade. It puts all heating contractors on the same level and leaves nothing to talk about. The owner can say 'so and so' is the lowest and he will have to do a good job according to law."

A letter from the firm of Goodhue & Company, plumbing and heating, Belfast, Me., is also interesting. It reads in part: "In the November 14th issue of 'Domestic Engineering' we note your editorial, 'The Need of a Heating Ordinance,' and wish to say, it is the best suggestion as a remedy for a condition most ruinous to the heating trade as well as very expensive to the manufacturers of boilers and radiators, we have yet seen. It is undoubtedly a fact that at least three-fourths of the so-called heating shops have not a man connected with them able to figure a simple room in a residence for radiation. Before a heating ordinance could be secured in this city some educational work, probably through the local newspapers, will have to be done."

The reference to promoting educational work through the daily press is an excellent suggestion. The local newspaper is very often an effective means of creating the right kind of public sentiment as regards the merits of proposed municipal reforms.

This subject, which is of vital interest to many, will be further discussed in subsequent numbers of "Domestic Engineering." Comments from readers or others in the trade will be gladly received.

Swimming Pools

Their Construction, Mechanical Installation, Water Supply, Heating the Water, Various Types of Installations Adapted to Different Conditions

By A. G. KING

(Continued)

Heating by Injected Steam.

One of the most effective methods of heating is by injecting steam into the water, and where live steam is available for the purpose there is no better method.

Steam may be injected into the water of the pool itself or into the water just before it leaves the supply pipe at its entrance to the pool.

A simple form of this method of installation is shown in Figure 17, in which the pool is filled with cold water from the street main, the supply not showing in the illustration. The maximum depth of water carries the water line to an overflow placed above the inflow pipe. A circulation pipe "A" is taken from the bottom of the pool and carried up to the point where the inflow is to be. By taking a 90 degree wrought iron elbow, with a 2-in. heel opening, a mixing arrangement can be made as shown in Figure 18 which will introduce live steam into the water and form a siphon, the suction constantly drawing water from the bottom of the pool, warming it, and discharging it into the top of the pool. The steam pipe should have gate valve permitting the steam to be shut off when the water is warm enough or partially closed if its full capacity is not needed to maintain the temperature of the water.

This method of installation maintains a constant current of water in the pool, which is highly desirable. Two

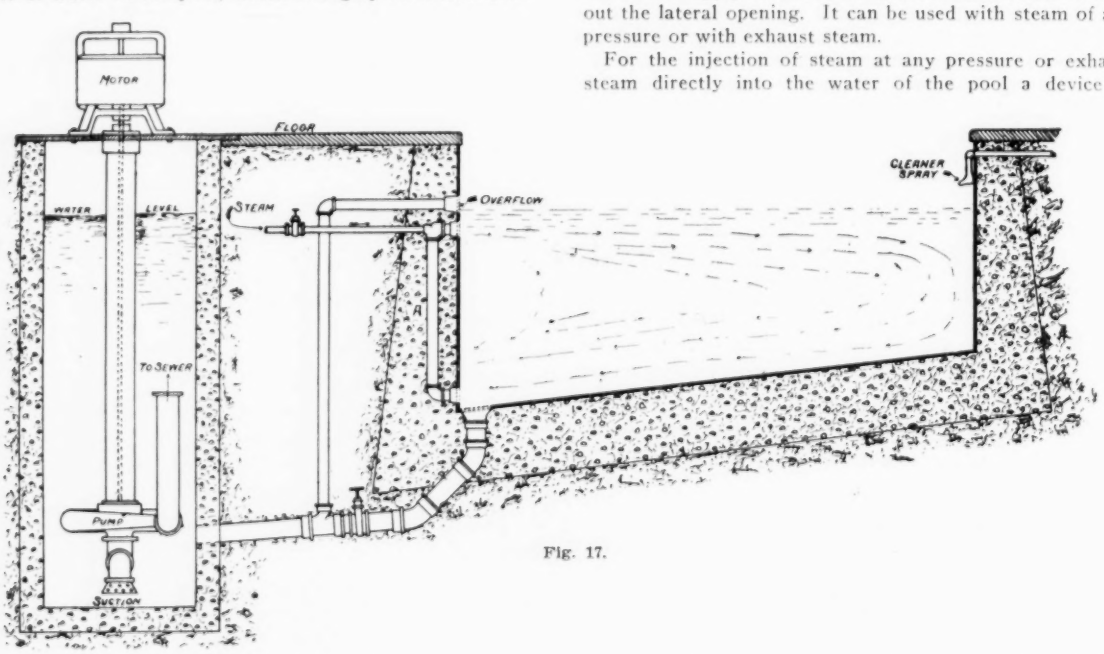


Fig. 17.

spraying nozzles at the opposite end of the pool create a surface movement towards the overflow removing scum and floating matter. As the pool is below the sewer level the waste is by an open, unvalved pipe into a sump, in which is placed a submerged, electrically driven pump, with automatic control. The water stands in the sump on a level with the water in the pool, and any rise in the level automatically starts the pump. When it is desired to empty the pool the automatic control is removed and the pump discharges the contents of the pool into the sewer.

Another form of making the steam injector is shown

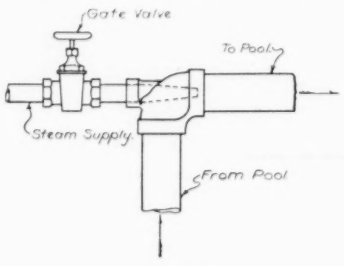


Fig. 18.

in Figure 19, where a 4-in. tee on the water main has one end reduced by a bushing and the 2-in. steam main introduced into it. This is extremely simple and efficient.

A continuous water heater and steam ejector is shown in Figure 20. Live steam is introduced into the top and the water supply at the bottom, the heated water flowing out the lateral opening. It can be used with steam of any pressure or with exhaust steam.

For the injection of steam at any pressure or exhaust steam directly into the water of the pool a device as shown in Figure 21 is used. It is claimed to be noiseless under any pressure as the construction of the device is intended to muffle the sound. Several patented devices of like nature are to be had. An air pipe introduces air into the water if desired, but its use is not necessary where

only moderate temperatures are needed. Figure 22 shows the application of this service, a baffle plate assisting in creating a circulation in the pool.

The efficiency of the method of injecting the steam into the water has been repeatedly proven. A notable example is found in a Nebraska city where a swimming

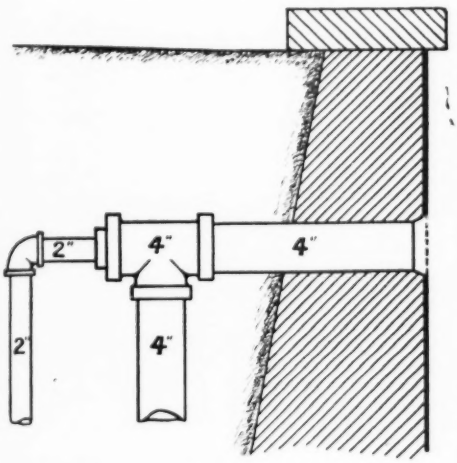


Fig. 19.

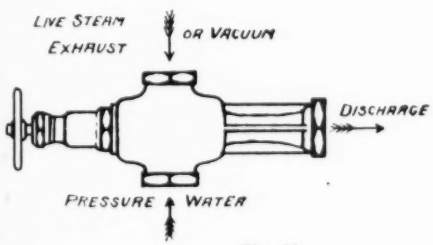


Fig. 20.

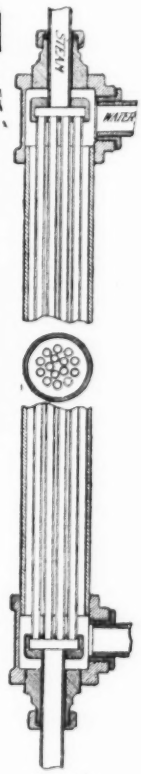


Fig. 26.

pool in a Y. M. C. A. building containing 40,000 gallons of water is warmed with low pressure steam to 76 degrees in three to four hours. Before the installation of this method two days were required to warm the water.

Heating by Live or Exhaust Steam.

Figures 23 and 24 show another method of heating the water by a feed water heater or by the injection of live steam into the water. The cold water supply comes from

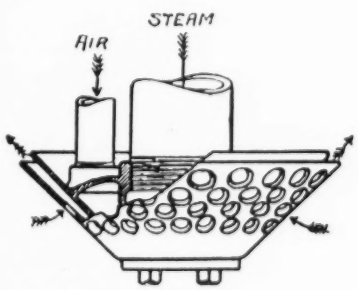


Fig. 21.

filters and passes down to a three-way tee where it is carried to the right and left to vertical pipes which form the ends of a parallelogram. The cold water supply is admitted to the tank at two points, "A" and "B," and may be heated at these points by the introduction of steam which is conducted to the same opening by a 2-in. steam pipe, cross connected, so that live or exhaust steam may be used. The cold water supply pipe is 5-in. the right and left branches are 4-in. and the vertical risers are 4-in. Either cold or hot water may be introduced at the points "C" or "D"; the cold water is governed by a valve on the 4-in. vertical pipe, and the hot water is governed by valves on the 3-in. horizontal right and left branches. The hot water is supplied to the tank by a 4-in. pipe

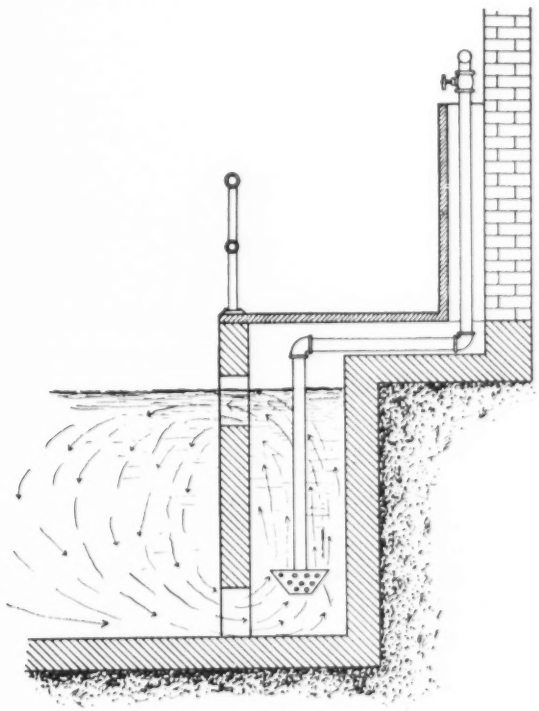


Fig. 22.

cross-connected to feed water heaters. Figure 23 shows a section of the piping shown in elevation in Figure 24. The waste is through an 8-in. pipe, governed by a gate valve on the outside.

The overflow is from the shallow end of the pool and

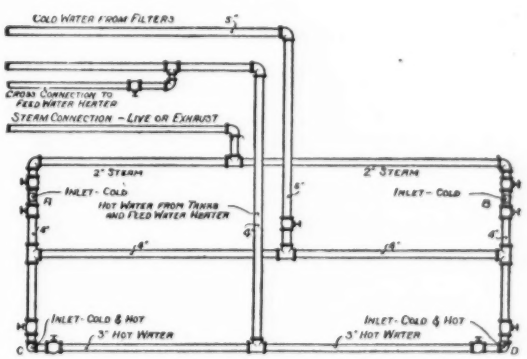


Fig. 23.

is not made in accordance with the best practice, which frowns upon any pipe obtruding into the pool. It is a standing overflow and the water level is governed by a slip pipe. A spraying nozzle at the end opposite the overflow, fed from the house tank, creates a surface flow

which carries scum to the overflow end of the tank. Figure 10 shows the design of this spraying nozzle.

Combined Steam and Hot Water Heaters.

One method of installation combines steam and hot water house heating boilers, the steam boiler being used

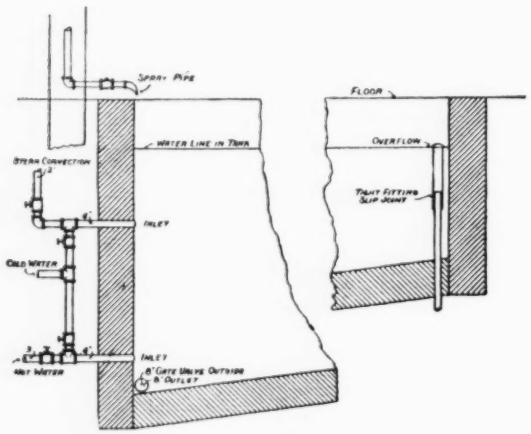


Fig. 24.

for supplying heat for the building in winter and aiding in heating the water for the bath, and the water heater supplying the hot water for the swimming pool in summer and doing a portion of that duty in winter. This combination possesses the advantage of supplying the heat for the building and heating water for the bath, and at the same time provides a plant which it is not necessary to utilize all the time in its entirety. In many swimming pools the patronage is variable; on some days more people bathe in eight or ten hours than come during the remainder of the week. On this account it is necessary to supply a system which will meet the maximum demand. In this combined system, as already stated, the steam heater can be used to heat the building, and by means of the auxiliary water heater attached to it shown in the illustration it can also supply all of the hot water needed except during rush hours, when the water heater can be

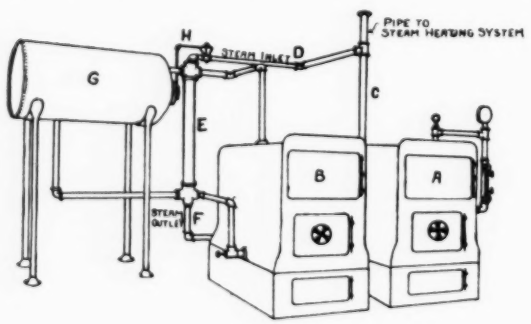


Fig. 25.

placed in operation. Conversely, during the summer the water heater only need to be put into duty, unless a larger demand may require the steam heater to assist in supplying hot water. This combination is shown in Figure 25, in which "A" is the steam heater and "B" the hot water heater. "C" is the pipe leading to the steam heating system of the building. "D" is the steam inlet pipe to the auxiliary hot water heater "E." "F" is the steam outlet pipe returning into the steam heater "A." "G" is the tank for storage purposes which is governed by a thermostatic value "H" controlling temperature at any desired point. The details of the auxiliary hot water heater "E" are shown in Figure 26.

(To be continued.)

A PERIPATETIC PLUMBER.

Eight months ago Charles Berkeley Smith, upon receiving the assurance of his physician that unless he took to the woods figuratively and literally speaking, his period of right to ornament the earth's surface would lapse, shouldered a pack of small tools and set out to tramp through the South earning his way by small repair jobs. During all this time he has not only regained his health by living in the open, but has succeeded in making a living beyond his best dreams.

The farmers and mountaineers found him so handy that he adopted a regular schedule and covered a definite route reaching all his customers once every month. Business got so brisk that he not only enlarged the number of trades within which to work, but also invested in a horse and wagon and later took on a helper to assist him. Business increased so rapidly that he has purchased a three-ton White truck upon which he has built an enclosed body about the size of a small freight car, and in which he carries all manner of repair parts and tools.

An examination of the interior of his van is simply bewildering. In addition to the cot and tent and gasoline stove used for domestic purposes by the roadside, he has tools and repair materials for tinkering with automobiles, agricultural implements, furniture, stoves, tin roofs, pumps, umbrellas, harness and wagons and on a pinch he can peg a half-sole on the farmer's shoes or nail a shoe on the farmer's steed. He can also sharpen mowers and smaller tools, file saws, paint signs or put a new spark plug or furnish a battery for your gasoline engine. He will also contract to paint your house or put in a complete plumbing system, including a septic tank. He will build a cement walk for you or overhaul your steam threshing machine.

He is very proud of his traveling repair shop and of the multiplicity of trades which he follows and asked your correspondent to suggest three things which a farmer might want to have done which he could not produce the tools and materials for, from his store. Your correspondent having been up against the dentist lately, suggested that Smith could not pull teeth—score one for the correspondent—but the next two guesses went wrong, because he showed the tools for cutting hair and for pruning trees.

In the plumbing line he carries a stock of bibbs, washers, etc., and a very small amount of cast-iron pipe, quite a little terra cotta pipe and fittings, and lead pipe, miscellaneous material in small quantities, replacing them at his headquarters once a month, or having them shipped to meet him on the road. Not being bothered with regulations or inspectors in the country districts, I am afraid that sometimes, on account of shortage of just exactly the proper material, his work may not have the finished appearance we might expect of a metropolitan plumber, but he says that the plumbing end of his business is looking up and that he may have to put on a special truck for this line of business alone.

A Little Joke.

"What makes you think she'll never cut a great figure in any man's life?"

"Well, you see how petite she is!"—Judge.

Blower Systems for Heating and Ventilating

Report of Special Committee at Semi-Annual Meeting of American Society of Heating and Ventilating Engineers, Held in Cleveland, July, 1914

By A. M. FELDMAN, Chairman

BLOWER systems, which are often an economic necessity, usually introduce an additional hazard contributing to the cause and spread of fire, particularly when used for conveying stock and refuse. It is impossible to eliminate the fire hazard from such systems, but reasonable safeguards can be provided to reduce it.

The general standards applicable to blower systems are to be subdivided into two classes:

A. Heating and Ventilating Systems.

B. Stock and Refuse Conveying Systems.

Class A. Heating and Ventilating Systems.

1. Blowers.—The word blowers is used to include blowers and fans.

a. Blowers to be so located as to be accessible for repairing and lubricating.

b. Casings to be strongly built and properly reinforced where necessary; joints to be air tight.

Casings and runners should be entirely non-combustible, and large enough not to require overspeeding.

To prevent accidents, openings into casings shall be protected with substantial screens or their equivalent.

c. Bearings and journals to be constructed in accordance with the best modern machine design, and so proportioned as to prevent overheating. The bearings shall be self-oiling and so designed as to prevent leakage of oil. They shall be located inside of casings or ducts wherever possible. If located inside of casings or ducts oilless self-lubricating bearings shall be used, made of bronze bushings fitted with plugs, such as graphite or metaline.

2. Ducts. (The word ducts is used to include ducts, flues, pipes, and tubes.)

a. Openings through floors for the circulation of air from one story to another shall not be used.

b. The passing of ducts through fire walls should be avoided wherever possible. Where ducts pass through

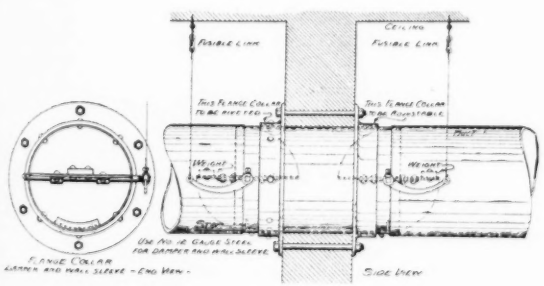


Fig. 1

fire walls they should be provided with automatic dampers located on each side of the wall through which they pass. (See Fig. 1.)

c. All ducts passing through floors shall be made of or protected throughout by approved fire-resisting material, not less than 4 inches thick.

d. Where ducts serve more than one floor, automatic dampers shall be provided on all outlet openings directly from such ducts and at all connections with branch ducts. (See Figs. 2 and 3.)

e. Entire system of ducts to be self-contained; no rooms, hallways, attics, hollow spaces, voids, nor other portions of the building to be used for air chambers or ducts, unless of fire-resisting construction, and then only by permission of the inspection department having jurisdiction.

f. Ducts to be made of galvanized iron or other approved non-combustible material. The same applies to enclosures of steam coils used for heating air.

g. To be thoroughly braced.

h. To be substantially supported by metal hangers or brackets.

i. Where subject to mechanical injury, ducts to be properly protected.

j. In no case shall the clearance between any metal ducts and combustible material be less than 1 inch.

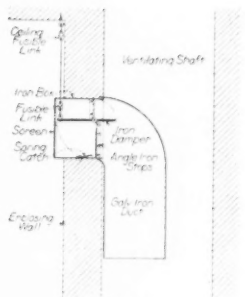


Fig. 2

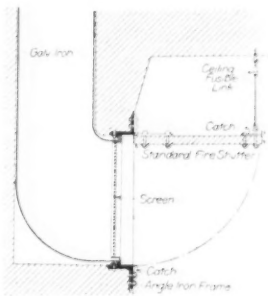


Fig. 3

k. Joints between ducts and floors, walls or partitions to be made tight by non-combustible material.

l. Outlets on supply and exhaust ducts should always be protected by means of register faces or wire screens.

m. Intake of air to be from outside except in re-circulating systems, and should be taken only from areas containing non-combustible material. Intakes to be protected with rolling shutters or heavy doors.

Intake and intake rooms, steam coils, blowers, etc., also ducts connecting blowers with vertical ducts which pierce floors, shall be segregated in a room cut off by fire-resisting partitions from other portions of the building. Where any such ducts must of necessity pass through other portions of the building, they shall be protected by four inches of approved fire-resisting material as required for ducts passing through floors.

3. Ventilation of Cooking Appliances.

Ventilating ducts used to carry off the grease laden vapors from hoods over cooking appliances, especially in kitchens of large restaurants and hotels, shall be constructed similarly to boiler smoke flues. A live steam jet should be provided at the end of the duct nearest the cooking appliances.

(Signed: A. M. Feldman, R. P. Bolton, J. A. Donnelly, Committee.)

Sewage Disposal for an Isolated Residence

Paper by Professor C. A. Haskins, of the University of Kansas
Read Before Kansas Master Plumbers' Convention Last Spring

WHEN a man reaches that stage of convenience where he is able to have water and toilet facilities in his house, and a sewer system is not available, the question of what to do with the waste arises. Too often the question is answered by simply digging a hole in the farthest corner of the lot to a stratum of sand, or some porous material, leading his drain to the hole and forgetting about it. If the hole is not in porous material and soon fills up and overflows, he remembers it, but if it is in a layer of porous or water bearing sand, he does not think any more about it, even though his neighbor's, or maybe his own well, becomes seriously polluted, and cases of intestinal disease develop in his own and his neighbor's family.

For many years sanitarians have been aware of the danger of the "cesspool," and have been reading and publishing articles on how to dispose of wastes properly. At the request of your President I have prepared an article on the subject similar to the one contained in our State Board of Health Bulletin, but since as plumbers you should know more about such things than the average person, I have discussed briefly the subject of sewage disposal, since the same principles apply for the disposal of sewage from a single residence as from a thousand residences.

Sewage disposal, whether for a single residence or for a community, is attempted for two reasons:

First, to protect the public health from dangerous diseases, which may be communicated by sewage; and,

Second, to prevent a nuisance, or to bring about convenience.

Sometimes one is more important than the other, dependent upon conditions—for instance, if a large flowing stream, which is not used for a water supply, but is used for boating or swimming, is available to a city, the sewage may, with a greater or less degree of safety, be emptied into the stream, and, to all appearances, is disposed of within some distance below. While it probably may not be an actual source of danger for any one, it may cause considerable annoyance near the sewer outlet, on account of the smell and floating partially decomposed matters. On the other hand, suppose no human being is accustomed to frequent the neighborhood of the sewer outlet, but that a few miles down stream a city derives its water supply from the river. In this case the danger may be great, but the nuisance slight. Therefore, the degree of disposal attempted for sewage varies considerably with conditions.

In all sewage disposal there are two steps to be accomplished:

First, the disposal of the solid matter; and, second, the disposal of the liquid matter.

Naturally, the composition of sewage varies, but the constituents of ordinary sewage from a small city are:

1. Body wastes, toilet, bathroom, kitchen, and laundry discharges.
2. Trade wastes from laundries, factories, etc.
3. Grit, dirt, and street sweepings, which enter through perforated manhole covers, and are sometimes thrown into the sewer.
4. Great quantities of water, used for flushing; storm water flowing in through bad connections and through perforated manhole covers; and ground water entering through imperfectly made joints.

The sewage from an isolated residence will consist only of those times mentioned under No. 1, and herein lies the greatest variance between the treatments necessary for proper disposal.

Since the first of the main steps in sewage disposal is the treatment of the solid matter, and the second is the treatment of the liquid matter, the two should be separated. This is done, usually, by plain sedimentation, by screening, by chemical precipitation or by a combination of any of these. Where the last two schemes are utilized it is usually necessary to press the solids so accumulated until they are free from the most of their water, when they may be used for fertilizing, for filling ground, or they may be buried. The first plan, however, that of plain sedimentation, is the one most often used. It has been found that when the solid matter of sewage is allowed to settle into the bottom of a water-tight tank and held, that a biological or bacterial action will take place in it, breaking the organic matter down into simple forms, releasing water and gases; in other words, putrefaction or rotting takes place, exactly the same as the putrefying or rotting action which takes place everywhere around us, except that in the bottom of this tank conditions are very favorable for the action of the "anerobic" bacteria, which accomplish their work, and it is done faster. Therefore, the name "Septic Tank" has been given to the form of tank used for settling the solids out of the sewage and allowing their putrefaction and partial liquefaction. Since the main object of this tank is sedimentation, all possible precautions for breaking up currents, etc., are taken in arrangements for the inlet and outlet, and baffle walls are built from the top and bottom.

In a tank receiving the sewage from a well developed sewer system, there enters, as has been mentioned, a considerable amount of inorganic sand, dirt and grit, in addition to other inorganic materials that cannot be acted upon by bacteria. The action of the bacteria upon solid particles of sewage leaves a finely divided residue in the bottom of the tank, and a floating scum of matches, corks, hair and other fibrous material on the top of the liquid. Naturally, in a tank receiving the sewage from a city this residue is more in proportion than in a tank receiving sewage from a single residence. This residue, which is called sludge, is disposed of by merely removing it from the tank and drying it by draining off water and evaporating by the sun, the moisture which will not drain off. This is usually done once each year, occasionally oftener, but more often once in two years. In a residential tank, however, the amount of sludge is so small, due to the lesser amount of dirt, grit and other inorganic material, that much longer periods have elapsed; in fact, we have no records of any tanks of this type having been cleaned in a period of five years, since the design was first sent out, although our records are by no means complete. It is advisable to provide for periodical cleanings.

The liquid from the tank, after the solids have settled out, contains a great deal of gas, finely divided particles of sludge, and dissolved organic matter. For the treatment of this, oxidation is necessary, and is secured through the

activities of a type of bacteria known as the "aerobic," or those working with oxygen, as opposed to the "anerobic" working without air, which are found in the septic tank. These organisms abound in the upper soil layers, and in water, naturally, and can be cultivated under favorable conditions of food, temperature, and air, in other environments. Therefore, to secure oxidation, sewage is subjected to dilution in water, to sub-irrigation, or to filtration. By filtration is meant not screening in this case, but the spreading out of the liquid in thin layers in voids of rock or sand, whose air supply may be periodically changed by siphoning off the liquid, drawing air into the voids.

The treatment by dilution in water depends, of course, upon the amount of dissolved oxygen in the water, and its ability to refresh its dissolved oxygen supply from the air. In many cases all the treatment secured for sewage is dilution in water, but since the two types of organisms used have entirely different habits and necessities for life, it will readily be seen that disposal by this method cannot be attained in so short a time, as by treatment by steps, giving each operation favorable conditions for working out.

Since enormous numbers of bacteria and a great supply of oxygen are necessary for treatment of any considerable volume of sewage, it follows that dilution must take place in considerable volume. Also, if it is desired to utilize the soil bacteria for oxidation, since they inhabit only the upper layers of the soil, and can only work efficiently where the air supply is plentiful, large areas of earth must be used for this method. Therefore, it is not commonly used for the disposal of sewage for cities, although there are several sewage "farms" in Europe and a few in this country, the largest one, which is discontinued now, I believe, at Los Angeles. In this State, the city of Hiawatha has a septic tank, followed by a system of sub-surface irrigation, but ordinarily cities depend upon some form of a settling tank and filtration, either sprinkling, contact or slow sand.

The system of septic tank and sub-irrigation is, however, remarkably well adapted for a small installation, which is to serve a single residence or a group of two or three residences, a school house or hotel, where water is available, but not a public sewer, and that is the type recommended usually for that purpose. While there are many different designs promulgated, some of them patented, many of them sold without patents to prospective users, I believe I can safely say that the one described in the following will be more efficient than most, and as cheap in the long run as any.

The septic tank for this use may be built of either concrete, brick or masonry, concrete probably being the better material, on account of being more easily constructed by unskilled labor. If built of concrete, the mixture should be 1:3:5, mixed not too wet, and well tamped into place. If the tank is built of brick, the brick should be laid in rich cement mortar, all joints well filled and the cross wall bonded into the side walls at every alternate course. Care shoud be taken to wet the brick before they are laid in place. Whether the tank is built of concrete or brick, after the mortar or concrete has had time to set, it should be plastered with a half inch coat of rich cement

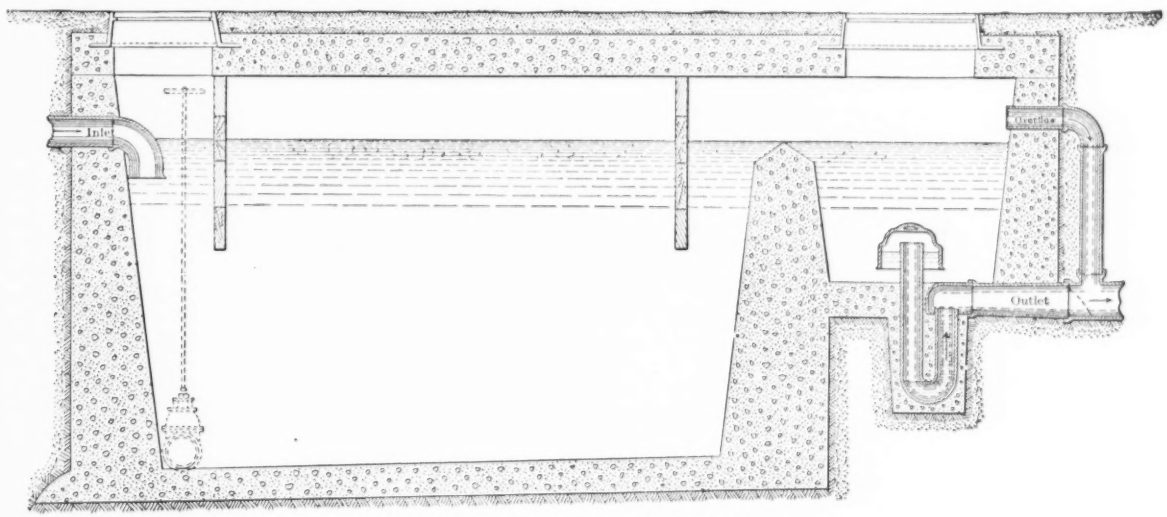


Fig. 1. Longitudinal Section of Settling Tank.

mortar, and the excess earth from the excavation should be well tamped around the outside. The inlet and outlet pipes should be carefully set at the proper elevations, the siphon placed exactly in the position shown in Fig. 1 (taken from Ogden and Cleveland's "Practical Methods of Sewage Disposal"), and care should be taken that bits of mortar, etc., are not dropped into the legs. It is important that the inlet and outlet pipes extend down below the level of the water to escape clogging by the scum which forms on top of the sewage. The top may be of either concrete or wood, although wood is preferable, on account of the fact that the whole top may be lifted off when it is desired to clean out the tank, or at times of trouble with the siphon or pipes. Ordinary 2x12-inch cypress with suitable 2x6 braces are often used for roofs, with three hinges on one side and a hasp or two, fitted with a padlock on the other, for holding it closed. In case concrete is used for a roof a manhole should be placed in both the tank proper and the dosing chamber to afford ingress.

The siphon, which may be procured from manufacturers of automatic flushing devices, is necessary to the proper working of the system, for if the sewage is allowed to trickle out into the drain tile, as it comes into the tank from the house, in intermittent doses, most of it will reach out into the soil at the first few open joints, causing the

ground there to become sour and foul smelling, and the best efficiency cannot be obtained. With the siphon working properly, which it should do, if set straight and no foreign material permitted to get into it, the effluent will be held in the dosing chamber until the proper level is reached, when it will all be rapidly discharged into the drain system.

The size of the tank is, of course, dependent upon the number of persons contributing to it, but the following table, taken from Ogden & Cleveland's "Practical Methods of Sewage Disposal," seems to have about the proper sizes and proportions.

TABLE I

DIMENSIONS FOR SETTLING TANKS

Persons Served by Sewer.	Mean Inside Width (Feet).	Mean Inside Length (Feet).	Depth (Feet).*
4	3	4	5
8	3	7	5
12	4	7.5	5
15	4	8	5
25	4	10	5
35	4.5	12	5
50	6	12	5
75	6	15	6
100	7	17	6

*Twelve inches greater than depth of sewage.

The size of the dosing chamber and of the siphon depends upon the length of drain tile necessary, which, of course, depends upon the porosity of the soil. The following tables, II and III, also taken from Ogden & Cleveland's "Practical Methods of Sewage Disposal," present the information necessary for this part of the design.

TABLE II

FOR USE IN THE CONSTRUCTION OF SUB-SURFACE IRRIGATION SYSTEMS IN SANDY OR VERY POROUS SOILS

Dimensions given are for inside measurement.

No. of Persons Served by Sewer.	Total Length of 3-Inch Sub-surface Tiling.	No. of Sections in Sub-surface System.	Mean Width of Siphon Chamber (Feet).	Mean Length of Siphon Chamber (Feet).	Depth of Siphon Chamber from Roof of Tank (Feet).	Diameter of Siphon (Inches).	Discharging Depth, or Maximum Depth of Effluent above Lower Edge of Siphon Bell (Inches).	Distance from Roof to Top of Wall between Settling Tank and Siphon Chamber (Inches).
4	140	2	2′	2′	2′ 4″	3″	13″	12″
8	280	2	2′ 6″	2′ 6″	2′ 4″	3″	13″	12″
12	420	2	2′ 6″	4′	2′ 4″	3″	13″	12″
15	525	2	3′ 6″	4′	2′ 4″	3″	13″	12″
25	875	2	3′	4′	3′ 2″	5″	23″	12″
35	1225	2	3′ 8″	4′ 6″	3′ 2″	5″	23″	12″
50	1750	2	4′	6′	3′ 2″	5″	23″	12″
75	2625	2	3′	6′	3′ 2″	5″	23″	16″
100	3500	2	4′	7′	3′ 2″	5″	23″	16″

The sewage level in the tank should never be less than 12 inches below the top of the tank walls. Wire walls are used instead of the tile discharge in larger installations.

The pipes for the distribution system should be sound, hard-burned, 3-inch agricultural drain tiles, in 1-foot lengths. If necessary to reach a desirable location for the sub-irrigation system, the siphon may discharge into a 4-inch sewer, laid with tight joints on a grade of not less than 2 feet in 100 feet, to a diverting box or manhole, out of which the drain tile may lead in one or more lines. They should be laid at a depth of from a foot to eighteen inches below the surface of the ground, and should be laid on a grade of 3 inches in 100 feet. This matter of grade or "fall," should receive careful attention, since if the grade is too great the lower end of the pipe will receive more than its fair proportion of sewage, while if the grade is too small, the upper end will receive too much. The system is not well adapted to very tight and retentive clay soils, though it has been used successfully for a time in soils of this character. A desirable, though somewhat costly modification that has been used successfully in tight soils, consists in digging the trench about 4 feet deep, filling the lower 3 feet or so with cinders or gravel, and then laying the 3-inch distribution tiles at the surface of this porous filling material, and covering them with about a foot of earth. The total length of distribution tiles deemed necessary for any particular installation may be laid in one or more single lines, extending out from the dosing chamber, or a single line may be divided into two or more branches. In case more than a single line is used great care should be taken to see that each line receives its fair share of the septic tank effluent. Where the natural slope of the ground is steeper than the grade required by the distribution lines, these may be zigzagged down the hill, or follow approximately the topography of the ground.

The connection from the house to the tank should be of 4-inch vitrified sewer pipe of the bell and spigot type. It should be laid to an even grade and alignment, and great care should be taken to see that the joints are all well filled with cement mortar, brought out to a full bevel. This is especially important, if the line passes by a well or cistern, through a grove of trees, or through a piece of wet ground, in the first case to prevent any possible leakage which might contaminate a drinking water; in the second place, to keep out the fine roots of trees, which might in time clog the sewer; and, in the third place, to prevent the infiltration of ground water.

It should be the expectation that once in from one to four or five years the tank will require cleaning out, the frequency depending largely upon the character of the sewage. The sludge taken from the tank at these clean-

TABLE III

FOR USE IN THE CONSTRUCTION OF SUB-SURFACE IRRIGATION SYSTEMS IN THE HEAVIER LOAMS (NOT CLAY OR HARDPAN)

Dimensions given are for inside measurements.

No. of Persons Served by Sewer.	Total Length of 3-Inch Sub-surface Tiling.	No. of Sections in Sub-surface System	Mean Width of Siphon Chamber (Feet)	Mean Length of Siphon Chamber (Feet).	Depth of Siphon Chamber from Roof of Tank (Feet)	Diameter of Siphon (Inches).	Discharging Depth, or Maximum Depth of Effluent above Lower Edge of Siphon Bell (Inches)	Distance from Roof to Top of Wall between Settling Tank and Siphon Chamber (Inches).
4	300	2	2′ 5″	3′	2′ 4″	3″	13″	12″
8	600	2	3′	5′	2′ 4″	3″	13″	12″
12	900	2	4′	5′	2′ 4″	3″	13″	12″
15	1125	2	4′	6′ 6″	2′ 4″	3″	13″	12″
25	1875	2	4′	6′	3′ 2″	5″	23″	12″
35	2625	2	4′	4′ 6″	3′ 2″	5″	23″	16″
50	3750	2	4′ 6″	6′	3′ 2″	5″	23″	16″
75	5625	2	6′	7′	3′ 2″	5″	23″	16″
100	7500	2	7′	8′	3′ 2″	5″	23″	16″

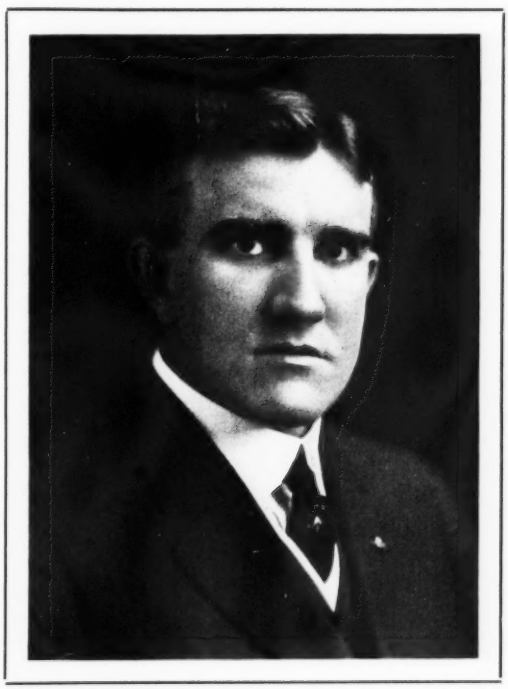
ing periods will be found to be relatively small in amount, and may be disposed of by running it into a trench or furrow and covering it with soil. This cleaning out should be done in the fall of the year, if possible, as at this season the sludge in the tank possesses less odor, and is less objectionable to handle than at other times. The sludge clean-out valve shown in the illustration may be built for this purpose, but it is not essential, as an ordinary "pitcher" pump may be used.

It should also be expected that every few years the distribution tiles will have to be taken up and relaid in a new trench a few feet away from their former position. This is simply because there is a gradual choking up of the open spaces in the soil, with the result that the soil near the pipes may become waterlogged and sour.

In many localities, where the rainfall is light, this subsurface "irrigation" has a noticeable effect. No nuisance should arise from the operation of the plant, but while its operation is automatic it should be inspected occasionally to see that the siphon is discharging properly, that pipes are not stopped up, and that the tank is not sludged up.

Sidelights on Men in the Trade

London "Cop" Seized Him



WHEN a man goes on a jaunt abroad, he little knows what fate has in store for him after the statue of Liberty fades out of his sight. The big liner might sink beneath the billowy blue and the tourist might aspire to become a mer-man or he might, like Jonah, inhabit the interior of a whale.

A hundred and one things might transpire from the Jonah stunt to dining in state in Buckingham Palace or getting a perfectly good receipt from a polite general after he has swiped your limousine for the good of the cause.

Back there in the good old days of '96, when Grover Cleveland and hard times held sway in the U. S. A., an ambitious and enterprising youth who had been representing the firm of Peck Bros. Co., jobbers of plumbing supplies in Chicago, fancied that he would like to go abroad and "conquer other worlds" and win renown forever more.

He had been reading "Domestic Engineering," and from its columns he gleaned the information that American manufacturers of plumbing supplies were always on the "still hunt" for live and daring advance agents in countries across the pond.

Firmly convinced of the idea that he would "clean things up" over there, he kicked the vile dust of Chicago from his boots and started eastward for New York where he booked passage for England, and where his ultimate destination was none other than that city noted for its fine Bass Ale—and also bobbies—"Dear Ole Lunnon."

After an exciting voyage across the wind-swept Atlantic he finally set foot on London soil. Care-free and fresh as a colt in clover he walked down the ship's gang-plank whistling "Yankee Doodle," and "The Girl I Left Behind Me." For several days he visited places of interest. He loafed around Hyde Park and watched the lords and ladies of the manor driving or riding throughbreds along the equestrian path. He walked down Piccadilly arrayed in top hat, spats and stick—just like one of your dashing 30 shilling a week "clarks." Then feeling a bit dry, don't you know, he sailed into a "pub" and was served with a "gloss" of ale by a smiling and demure bar-maid. From there he strolled out and hailed an omnibus and journeyed to the nearest tube station, where for "tuppence" he was whirled underground to Oxford Circus, from where he continued his aristocratic promenade along the Strand. The next day being Sunday the ambitious American advance agent took a trip to "Petticoat" lane, the Ghetto of London, in which section he had the pleasure of having his silk handkerchief and gloves extracted from his pockets,—and right in broad daylight too.

After finishing his London sightseeing, the American gentleman, who was none other than Charles C. Stringer, started off to combine business and pleasure in a two-months' bicycle trip through England and Scotland. He secured sample orders for various American made articles in the plumbing supply line, and then upon his return to London to await the arrival of the samples from the United States, he accepted a position as manager of the London office of "Domestic Engineering," during the absence of the resident manager, who had taken a trip abroad.

"This job," said Mr. Stringer, "suited me nicely, for you see I had a nice place to hang my top hat during the week. One Friday night I stayed down at the office to attend to some correspondence. At that time London offices used to close up tight at 5:30 p. m., and policemen were supposed to see that the outer doors of all office buildings were under lock and key after that hour.

"I remained at work until 8:30 p. m., when I discovered that I had been locked in. I had the outer but not the inner key to the building. I was in a predicament. So I looked out of the window and spied a 'bobby' down on the walk, and I hailed him. 'I say, old top,' said I, throwing the outer door keys down, 'won't you open the bloomin' door. I am bally well locked in, you know.'"

Instead of turning to and opening the door, the "bobby" blew his whistle and in a few minutes twenty "bobbies" were on the scene. Instantly there gathered in the street from 500 to 1,000 people who waited breathlessly to see the "bobbies" capture a desperate gang of burglars supposed to be in the building.

"What are you doing here?" demanded the sergeant of police as he entered the London office of "Domestic Engineering" with his brave crew.

"Ha! ha!" laughed Stringer. "Don't you realize your mistake now. Why I'm down here tonight watching the business of 'Domestic Engineering.' Come here and look at the correspondence."

"Not on your life!" cried the sergeant. "You come right along with us to Hollaway."

"All right sergeant. I'll come along."

On arriving at police headquarters where Stringer had a vision of a cell and cold damp walls staring him in the face, matters and things were finally straightened out by the arrival of a day "bobby" who said he knew the accused was no burglar and that he had seen him going in and out of "Domestic Engineering's" office on divers occasions.

After a nine months' profitable stay in England, Stringer visited Holland, Belgium and France, and returned in

1897 to Chicago and went to work as a representative for the Peck Bros. Co., which later developed into the Federal Co. and which six years ago became the Federal-Huber Co. He remained with them until 1905, when he resigned to assist in the organization of the Republic Mfg. Co., whose business has since been acquired by the Ahrens & Ott Mfg. Co., the Chicago distributors of the Standard Sanitary Mfg. Co.

Today he is the live and wide-awake manager of the Chicago office of the Ahrens & Ott department of the Standard Sanitary Mfg. Co. He is one of the likable men in the trade and if you don't know him—just take the trouble to get acquainted.

THE SALESMAN'S REBUFFS AND DEFEATS.

In the current number of the "American Magazine," C. I. Henrikson has written a snappy article full of human interest entitled "Under The Salesman's Crust."

"His heart is light," begins Mr. Henrikson, "and his share of the blessings of this world consist of good health and his job."

Master plumbers and fitters know of and can recall many salesmen who have ever and anon "dropped in on them," whose hearts were light and whose smile never came off, order or no order.

Mr. Henrikson goes on to say: He is an optimist. Not because he loses orders or is frequently turned down on the very brink of success, but because at times he must create the very atmosphere he breathes. The cold water that is frequently thrown over him must often have the invigorating effect of a shower bath.

Beneath the beetle's horny shell, folded away out of sight, lies a pair of thin membranous iridescent wings. Coaxed by the warm southwest wind it spreads them out on a summer evening and soars away into the mysterious distance.

And the salesman, footsore, weary, and tempted by an hour of solitude, forgets his goods and his line, shuffles out of the uniform you have learned to know, and gives himself up to communion with his inner self.

Look at him closely. Those lines in his face didn't all come from smiling. That slight stoop in his shoulders didn't come from holding his head up high. The hand that grasped yours so gladly or patted you on the back with such emphasis sometimes lies open and limp, and all that is worth while in the world if placed in the hollow of his palm would not tempt his fingers to close over it. The courage that bids him face the lion in his den deserts him, when an expected letter from home does not appear. The optimist, the man with such a fund of good nature, the smart man who can create demands and make men buy his goods, wilts when he sits alone and lets his hunger for the kiss of absent wife and babe take the nerve out of him.

A salesman is only human, but let's take off our hats to him for teaching us the practical value of the stiff upper lip and showing us how energy and persistence, when tactfully applied, bring home the bacon.

When times are dull and when the business world turns sour, when "nothing doing" stalks through the land like a pestilence and paralyzes trade, the salesman perpetuating the traditions of his calling, continues to spread a gospel of optimism that comes into its own at last. For the smile and handshake of the salesman, his resourcefulness and versatility, his politeness and good fellowship, are the very foundation stones of humanity in business.

But with all that, remember he is only human, and remember the beetle and its silken, sensitive, delicate wings which you cannot see; and when you turn a salesman down don't forget he is a man, and that you are nothing if you are not his brother.

"For He's a Jolly Good Fellow."

Among the various gentlemen of the manufacturing fraternity who helped to put the "spice o' life" to matters and things between sessions of the convention of the New York State Association of Master Plumbers at Utica this year, there was a chap from Cleveland, O., who surely did his share. The gentleman appears in the accompanying picture and he is none other than Walter Deutsch, the "umpire" or rather the proprietor of the Empire Brass Company, of Cleveland, O.

Walter Deutsch, of the Empire Brass Co., Cleveland, O.

The Cause Discovered.

A Swede was working for a farmer, who demanded punctuality above everything else. The farmer, according to "The Youth's Companion," told him that he must be at work every morning at 4 o'clock sharp. The "hand" failed to get up in time, and the farmer threatened to discharge him. Then the "hand" bought an alarm clock, and for some time everything went along smoothly. But one morning he got to the field fifteen minutes late. The farmer immediately discharged him, in spite of his protestations that his alarm clock was to blame.

Sadly returning to his room, the discharged employe determined to find out the cause of his downfall. He took the alarm clock to pieces, and discovered a dead cockroach among the works.

"Well," he soliloquized, "Ay tank it bane no wonder the clock wouldn't run—the engineer bane daid."

LEGAL DECISIONS

Construction of Guaranties.

A guaranty, like any other element of a contract, the Supreme Court of Washington says, in Turlock, etc., Co. vs. Pacific, etc., Co., must be construed reasonably, and in reference to the known nature of the subject-matter. Men will not be presumed to have exacted, on the one hand, nor to have given on the other, a guaranty of the impossible. 127 Pacific Reporter, 842.

Plumber's License.

One making application for the reissue of an original certificate as a master plumber, who, at the time of such application, was employed by a corporation at a salary in a shop furnished by it at the address stated in his application, will nevertheless be entitled to a reissuance if at the time he is exercising the duties of superintendence, according to a decision by the Supreme Court of New York (148 N. Y. S., 518) in the case of McQuade versus Morrow.

A Contract Cannot Be Rescinded by Countermand of Order.

A written contract for the sale and purchase of goods, the Court of Appeals of Georgia holds, in Morgan vs. Company, 77 Southeastern Reporter, 913, cannot be rescinded by a countermand of the order for the shipment of the goods, or by a notice by the purchaser to the seller that he will not accept the goods if shipped. Before a valid rescission is accomplished, the seller must give his assent thereto.

Contracts Void for Uncertainty and Rights of Third Parties.

While the courts are reluctant to declare any contract, and especially a written one, unintelligible or insensible, for the plain reason that the parties themselves usually intend to create some sort of obligation, nevertheless, neither the court nor the jury can make a contract for the parties, although it may resort to many rules to ascertain their intent when they go so far as to attempt the creation of some form of obligation. If the written terms, although intended for a contract, be so incomplete, uncertain, equivocal, or indistinct as that, after applying to them all permissible rules for construction they are uncertain as to what the parties actually intended, there is no contract. In other words, if the meaning of the parties cannot be ascertained, from the interpreted writing, the contract will be void for uncertainty. So, also, it is generally held, the Supreme Court of Iowa says, in Gould vs. Gunn, 140 Northwestern Reporter, 380, that a contract which formulates no practical basis upon which the amount of damages, for a breach, can be ascertained is void for uncertainty. Whether or not a third person may enforce a contract made for his benefit does not depend at all upon whether he has furnished the consideration for the agreement, although it must be conceded that in such a contract there must be a consideration for the promise. This may consist, however, in some benefit conferred upon the promiser, or doubtless, in most cases, whether there has been any determent to the person with whom the promise is made.

Legal Definition of "Merchant."

A merchant, the Supreme Court of North Dakota holds, in State vs. Fleming, 140 Northwestern Reporter, 674, is one who buys to sell, or buys and sells, goods or merchandise in a store or shop. A transient merchant, under a licensing law, is one who engages in the vending or sale of merchandise at any place temporarily, and who does not intend to become, and does not become a permanent merchant of such place. Formerly the word "merchant" seems to have applied to wholesalers only; but the court takes it that this was with reference to the conduct of business in England, and perhaps in the early days of this country, when the man who is now designated as a retail merchant was, and in some places still is, called a shopkeeper. It then served to distinguish between the wholesaler and the retailer; but, under modern usage in this country, such distinction is no longer maintained. The man who runs a retail store is not commonly spoken of here as a shopkeeper, but rather as a merchant. Two essentials are necessary to constitute one a merchant in the ordinary meaning of the word, namely, that he must buy and sell, and that he must keep a shop or store for that purpose.

Monopolies and Contracts in Restraint of Trade Under the Common Law.

Monopolies, the Supreme Court of Iowa says, 140 Northwestern Reporter, 844, have always been odious at common law, and all contracts, arrangements, or agreements in restraint of trade or of free competition were void. It was not necessary, under the common law, that the monopoly be perfect, as it was its tendency, rather than its ultimate effect, which the law reproved. As a rule, a contract which creates such a monopoly as to put it in the power of a combination to raise or lower prices is invalid. A contract or arrangement between persons in a given business whereby they seek to control the price of an article, is invalid, especially where the article in question is one of necessity or in general use. Whilst originally all contracts in restraint of trade were illegal some exceptions were introduced into the common law, and the rule now seems to be that such contracts are not illegal, save when unreasonable in character, and that where incident or ancillary to some lawful contract, as between vendor and purchaser, partnership, employer and employe, and are not unreasonable in their scope or operation, they are not illegal. Again, the doctrine of restraint, as applied to the early cases, has been broadened, and all contracts in unreasonable restraint of competition are now understood to be in restraint of trade. Of course a mere selling agency is not a monopoly, and neither the common law nor the antitrust statutes apply to a genuine selling agency.

George B. Moore, a master plumber of Springfield, Mass., was injured when struck by an automobile in that city a few days ago. He was taken to the hospital, and physicians stated that he would recover unless unexpected complications arose. Mr. Moore is fifty-eight years of age. In addition to being engaged in the plumbing business he is associated with the Hampden Ball Cock Co.

Award Prizes in Window Display Contest

Judges Select Jennings-Gresham Co., of Atlanta, Ga., for First Prize- See Page 17. Sanitary Plumbing Co., of Los Angeles, Cal., Wins Second Prize

IN a decision rendered in Chicago on November 24th, three impartial judges, well known to the trade, selected the prize winners in "Domestic Engineering's" Window Display Contest. The first prize of $25 was awarded to the Jennings-Gresham Co., of Atlanta, Ga., and the second prize of $15 to the Sanitary Plumbing Co., of Los Angeles, Cal. Details regarding other awards will be given in an early number of "Domestic Engineering."

The three gentlemen, all residents of Chicago, who served as the judges and made the awards after earnest and mature deliberation were: James J. Wade, Sr., pioneer master plumber; Thomas J. Claffy, assistant chief, Bureau of Sanitation, City Hall, and president of the American Society of Sanitary Engineering, and William Devine, western representative of Thos. Maddock's Sons Co., of Trenton, N. J.

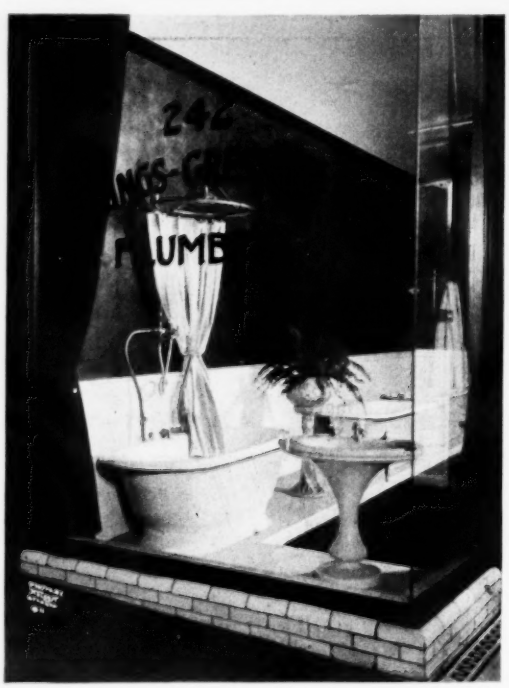
The judges expressed satisfaction with the good taste and interest shown in window displays by the many master plumbers and fitters who had submitted photographs of their show windows. The display of the Jennings-Gresham Co. was considered the best all-round show window and one that would instantly command public attention. The window of the Sanitary Plumbing Co. was chosen as the next best because of its general characteristic of attractiveness.

Most of the pictures which were entered in the contest showed points of interest considerably above the commonplace, and it proved quite conclusively that master plumbers and fitters as a class are today taking more pride in attractive and clean-cut window displays, than ever before, and that each

James J. Wade, Sr.

William Devine.

Thomas J. Claffy.



View of One Section of Prize-Winning Window of the Jennings-Gresham Co., Atlanta, Ga.—See Page 17 for Complete View.

year records a marked advance along this line. The trade is fast awakening to the fact that attractive show windows have a distinct trade pulling power, and in many instances the old style of window display is being displaced by the unique and effective kind, calculated to exercise a magnetic appeal and "catch the public eye."

First Impression Counts.

It's the first impression the passerby gets that the store depends upon. The first glance in the window tells the story.

Enough cannot be said to arouse some business men to the fact of the enormous importance of attractive, original window displays. They are the golden hooks and bait that tempt the ever-interested, searching public.

The wise business man knows that when any line of goods is well displayed the coffers will sooner or later jingle. If you are doing a business on a small scale, so much the greater need of your making the most of every inch of available space.

Master plumbers and fitters who proceed to convert their window space into an advertising medium should never crowd the display, no matter how great the temptation to add just one or two more articles. This is the advice of one of the greatest of New York window advertisers in a talk at a meeting of expert window dressers held recently in Chicago.

Timely Poster In Window.

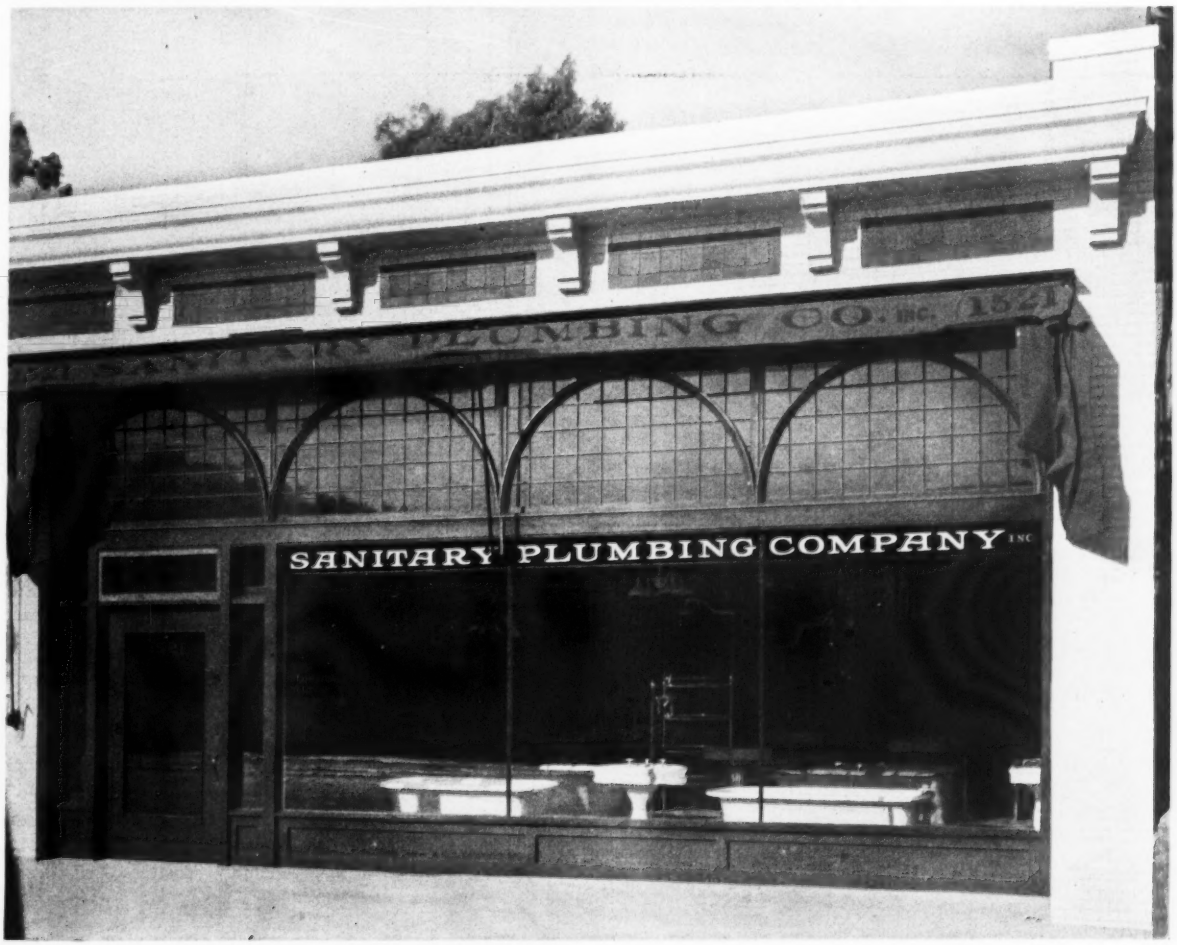
A plumbing concern in Ohio added a finishing touch to a very attractive window display by the addition of an attractive Thanksgiving day poster which read:

"Get the kitchen range repaired if you would cook your Thanksgiving turkey properly, for if the fire is not right your dinner will be spoiled. Our facilities for doing all kinds of range

work cannot be surpassed. We have the knowledge, skill and the men to do the work always ready, and for that reason can do repairing at lower prices than any other shop in town."

A Moving Sanitary Display.

A plumbing shop in Chicago arranged an attractive window display sometime ago which caught the public eye very effectively. Upon a round pedestal were exhibited a bath tub, a closet bowl and an artistic lavatory. These articles of sanitary ware swung around on the pedestal during the hours the street was thickest with pedestrians. The motive power for the pedestal was furnished by electricity. The display was unique as well as forceful in its appeal to the eye.



Window Display of Sanitary Plumbing Co., Los Angeles, Cal., which was Awarded Second Prize in the Contest.

What is "Punch?"

What is that force in an advertisement that makes you buy the thing advertised?

What is it that enables one man to sell two or three cars while the other fellow isn't selling any?

We call it "punch" in a general way, but what is "punch?"

Punch is vim vitalized. It is vigor with a voltage behind it. It is "pepper" coupled to "push." It is power, personality, persistency and pugnacity done up in the same package.

It is knowing enough—not too much.

It is talking enough—not too much.

It is the correct sizing up of a situation.

It is knowing what to do with a situation when once sized up.

It is knowing how to say and do forceful things in a forceful way.

It is knowing when to pull the order blank.

It is the ability to get out of a tight place with the order.

It is dominating the interview and coming away with the check.

"Punch" is the child of ambition and the father of success.

"Punch" is just plain, every-day "horse-sense" with a "kick" in it.—Ford Times.

Money Wasted.

"That young millionaire says he holds you in the kindest remembrance. He says it was at a party given by you that he proposed to his wife."

"The affair has unpleasant reminiscences for me. That was a very expensive party, and I gave it in the expectation that he was going to propose to one of my girls."—Louisville Courier-Journal.

Questions and Answers

CONNECTIONS FOR SHOWER BATH RECEPTOR.

Editor "Domestic Engineering":—Please show an illustration in your next issue giving the connections for a shower bath receptor, such as generally used in residence bathrooms.

Elgin, Ill. PLUMBER.

As requested by "Plumber," we show in the accompanying illustration the connections for a shower bath receptor. See Fig. 1.

These connections, it will be noted, are not different

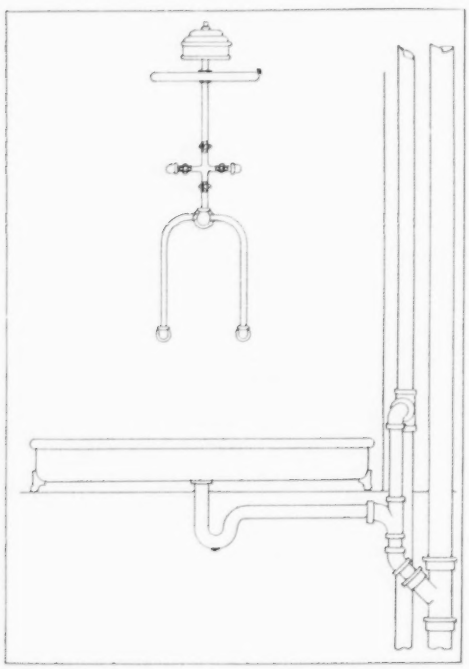


Fig. 1.

from those of other plumbing fixtures of more common use.

This is a most useful fixture, affording a luxury that is a great addition to the comfort of a toilet room, and we do not understand why it is not more generally installed.

RANGE BOILER TO BE HEATED BY GASOLINE WATER HEATER AND FURNACE COIL.

Editor "Domestic Engineering":—I submit a sketch showing range boiler to be heated by gasoline water heater on same floor as boiler, and furnace coil in basement. Please inform me how proper connections can be made.

Richland, Mo. H. A. J.

Correspondent's range boiler problem is shown in Fig. 1. There are several ways in which connections can be made, and the one that we would most strongly advise is shown in Fig. 2. The furnace coil has its flow pipe con-

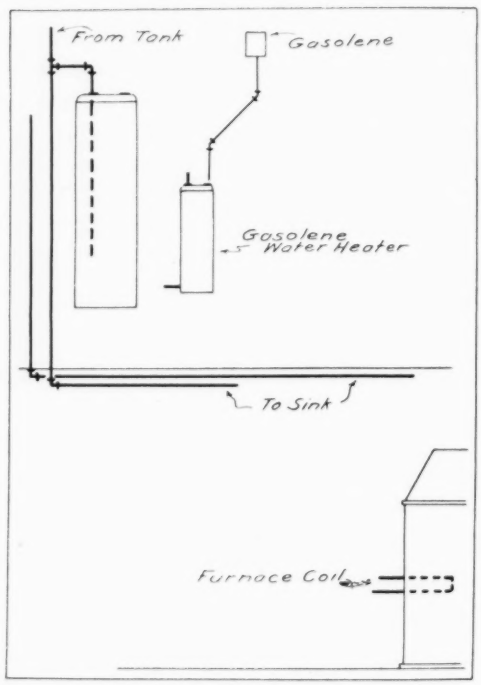


Fig. 1.

nected into the side of the boiler, and the water heater connects into flow pipe from boiler just above the boiler.

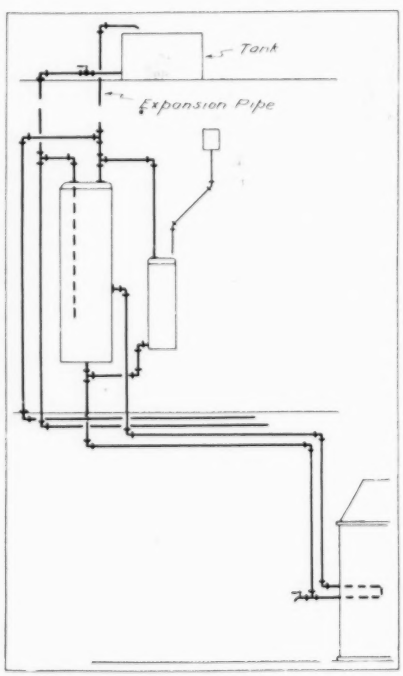


Fig. 2.

This latter connection, known as a quick-heating connection, allows hot water to be delivered at fixtures soon

after the heater is lighted, a desirable feature in the economical use of water heaters.

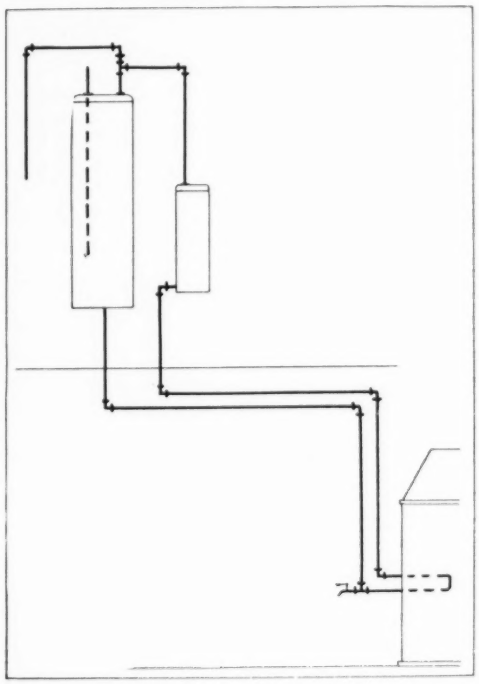


Fig. 3.

An expansion pipe should be connected at the high point on the hot water pipe from boiler, and carried over the top of the tank.

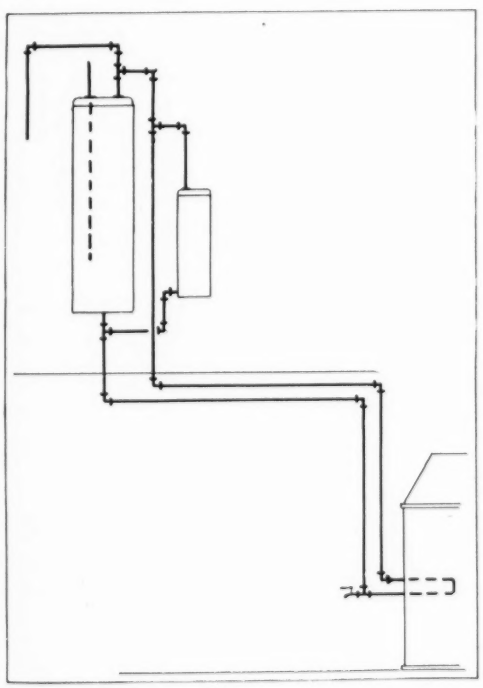


Fig. 4.

Another method appears in Fig. 3, in which the hot water passes through both coil and heater. This method would be excellent under some conditions, and calls for less pipe, but in this instance it would not be as satisfactory as Fig. 1 in our opinion. If the boiler were not fed from an overhead tank, there would be no need of an expansion pipe, none being shown in Fig. 3.

On work in which two or more sources of heat are employed, there is often seen such a connection as that in Fig. 4, where the heater flow pipe is connected into the flow from the coil. This is bad practice, as the velocity of flow from one source will often tend to block the flow from the other source.

CONDENSATION TEST ON HEATING BOILERS.

Editor "Domestic Engineering":—I would like to get a description of the condensation test on cast iron steam boilers.

Pittsburgh, Pa. B. W. J.

The method of testing low pressure boilers by condensation is quite simple provided no elaborate apparatus is used in making the test.

The firing of the boiler for the test should be as nearly as possible like the actual firing the boiler demands under certain conditions of efficiency in cold weather without making it necessary to force the same.

The smoke flue should be of such area and height that there will be sufficient draft to accommodate a boiler of the size to be tested with a stack temperature (temperature of the gases in smoke pipe) not exceeding 500 degrees, as the average stack temperature for low pressure house heating boilers in actual operation is from 350 to 450 degrees if conditions are right.

In making a test a wood fire should first be built in the boiler and should burn for possibly three-quarters of an hour before the fuel charge of coal is added. The apparatus may be so arranged that the condensing surfaces are subjected to the cold outside air in which event a record must be kept—hourly or more frequent readings—and the final results reduced to equal an average temperature of 70 degrees surrounding the radiators or condensing surfaces, as all boilers are commercially rated on the basis of the radiators being located in air at a temperature of 70 degrees. The steam pressure at the boiler should be kept at two pounds in order to conform with the present manufacturers' rating. The water of condensation is trapped into a receptacle and weighed. The amount of water supplied to the boiler is also weighed and its temperature noted.

If desired the steam may be discharged directly into the atmosphere at atmospheric pressure, in which case the amount of water supplied to the boiler is measured and a record kept of the evaporation furnishing a definite knowledge of the B. t. u's. transferred from the fuel to the water.

The manufacturers' ratings referred to above are based upon the factor of one-quarter or .25 pound of steam condensed by each sq. ft. of radiation (cast iron) per hour for an eight-hour period of firing with possibly 1/5 of the fuel remaining for rekindling requirements with two pounds gauge pressure at the boiler.

The average condensation of water per pound of fuel is 8.5 pounds.

To find the hourly rate of combustion divide four-fifths of the fuel burned per hour by the square feet of grate surface.

To find the hourly rate of evaporation in pounds per sq. ft. of heating surface multiply the amount of fuel

burned per hour by 8.5 (the pounds of water one pound of fuel will evaporate) and divide by the total heating surface.

The total evaporative power of the boiler per hour under the conditions named is found by multiplying the pounds of fuel burned per hour by 8.5, the rate of the evaporation, and the manufacturers' rating in sq. ft. of direct cast iron radiation may be obtained by dividing the total evaporative power by .25 (¼ pound of steam condensed per sq. ft. of radiation per hour). Many manufacturers deduct 10 or 15 per cent from the amount thus obtained as a factor of safety and thus reduce somewhat the rating given to the boiler.

As the stack temperature or the temperature of the gases in the smoke pipe is increased the periods of firing are necessarily more frequent and the coal consumption is thus increased; therefore, as stated before, the temperature of the smoke and gases in the flue should not exceed 500 degrees.

BOILER HEATED BY TWO RANGES AND HEATER.

Editor "Domestic Engineering":—I am sending you a drawing of work put in by a man who called himself a plumber, but which does not work.

We get steam at the draw-off on the water heater. The boiler also rumbles and hammers. Please explain what causes the trouble, and show how the work should be properly installed.

Manchester, N. H. C. D.

Fig. 1 shows the work mentioned by "C. D.," and we find several features that are open to criticism. In the

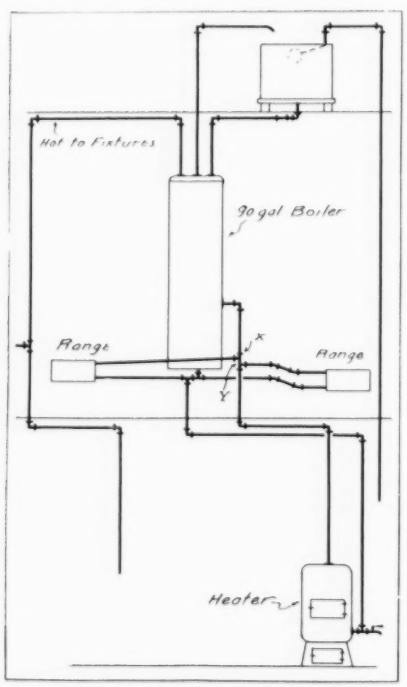


Fig. 1.

first place, with the storage tank only a few feet above the boiler, there is so little head on this system that there is sure to be trouble from the accumulation of air, and it is very necessary to provide against this possibility.

An attempt has been made to do this by running a vent or expansion pipe up to the storage tank, from the top of the boiler. This, however, will not accomplish the desired result, for the point where the most trouble will occur is on the high part of the hot water piping to fixtures, and the vent pipe, as now run, will not vent this pipe. In Fig. 2 we show the proper method of taking this pipe from the high point on this line.

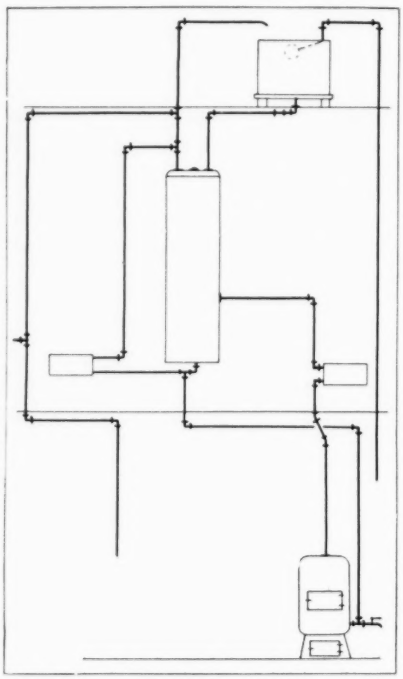


Fig. 2.

Other bad features are the connections at X and Y. When flow connections are made in this way, that one which has the greatest velocity will tend to hold back the flow from the other connections. From the fact that steam appears at the draw-off of the basement heater, we should judge that one or the other, or both, of the two ranges have a sufficiently strong flow of hot water to hold back the flow from the heater.

In Fig. 2 we give what we believe to be very much better connections. The heater and one of the ranges are so connected that there is a circuit for the hot water through both of them, the other range being provided with a quick-heating connection.

Properly Crushed.

"Well," sneered her husband, "suppose you get the ballot. What will be the first thing you do?"

"Order a voting costume, of course!" was her triumphant retort.—Puck.

Usually.

Visitor—"Who's that old gentleman just going out?"

Citizen—"That's old Jones. He hasn't been to church for thirty years."

Visitor—"Who's that sad looking young lady with him?"

Citizen—"That's his daughter. She's all broken up. Jones made her bust her engagement because her fellow wasn't of the same religion as Jones."—Puck.

Business Methods for the Plumber and Fitter

XXIII.—Specialization in the Plumbing and Heating Business Helps to Reduce Labor Cost

By WESLEY A. FINK

THE advantages to be gained fom specializing are many. It is easier and cheaper to advertise one line of work, than a great variety of lines, the workman becomes more proficient if kept continually employed at the same kind of work, and it is easier to hire workmen who are proficient in one kind of work, than to secure men skilled in every branch of the trade; less outlay of capital is required to equip the shop with labor-saving tools, superintendence is less, the work can be planned beforehand in a scientific or more economic manner based on past results, the prestige of the shop can be increased, if stress is laid upon the special facilities you have and the skill your workmen have in a certain line of work.

In a small shop, with no facilities, little capital and few workmen, the only work they can handle economically is jobbing work. If they secure a job of say, house heating, they have to send a man, who is not trained specially for this work, and whose time and experience has been taken up with a little of everything. Perhaps a journeyman and helper are sent to complete the whole work, lay out the work, cut the pipe and install the system, a high price man doing both the skilled and laboring work.

In the large shop, making a specialty of steam fitting, the estimator or draughtsman will be sent to the place to make up a complete set of plans of the job; the pipe will all be cut by cheap labor and power in the shop and delivered to the job ready to be erected; one skilled man with several helpers or laborers sent to the job to erect the work in the quickest and cheapest manner. Helpers who work on nothing but steam heating can be used to do work under the supervision of a skilled mechanic, where in the small shop, it would have to be done by a high priced mechanic.

In the small shop, one skilled mechanic can only supervise one helper; where in the large shop, one skilled mechanic can supervise a great many helpers, who also have some skill already, from the fact that they have been continuously kept employed on one class of work.

The saving that can be effected by the latter method is this: Supposing a job under ordinary conditions would take two men each twenty days, the mechanic earning $3.50 per day and the helper $2.00, the total cost for wages would be $110; but if the work were so planned and distributed, as to only require 10 days of the mechanic's time, and several helpers used on the job, it would work out thus:

10 days, mechanic at $3.50 per day	$35.00
30 days, helpers at $2.00 per day	60.00
Total	$95.00

This would make a saving of $15 in wages by the latter method over the former. Little savings like this in the course of a year amount to a considerable sum. This also explains at times the great difference in estimates on the same work. One plans to do the work in the cheapest manner, and has the facilities, capital and workmen to do it that way; the other merely sums up the time to do the job, and expects to do the work in any old manner, so long as it gets done, regardless of what it costs.

Take operation work on rows of small houses: In the small shop due to lack of equipment, capital and a sufficient number of employes, they would be forced to send one mechanic, a helper and a few laborers, and finish one house at a time. The shop making a specialty of this class of work, would send one skilled man to superintend, and a number of helpers and laborers to start on several houses at one time; several drains would be started at once, the skilled mechanic supervising them all at one time; the roughing-in work starting simultaneously in several houses at the same time, the skilled mechanic supervising them all at the same time also; the finishing work completed in several houses at one time by a cheap class of labor all under the superintendence of the one skilled mechanic.

This would hold good in any particular branch of the plumbing or steam fitting business. The shop, while taking all work that comes its way, yet making a specialty of one line, can have a force of workmen, mechanics, helpers and apprentices skilled in that particular line, because they are kept continuously employed on the same kind of work. The cost of superintendence will be less, the work is easier planned beforehand, cheaper labor can be employed on that part of the work requiring less skill, and special tools and equipment can be secured to lessen the handwork and increase the production in the shortest possible time.

Many a foreman or bright mechanic is encouraged to start in business for himself by the promise of work from a large contractor or real estate agent. But to his sorrow he often finds that he makes less money in a small shop of his own than he did as an employe in a large shop. When he starts in business it takes a long time to build up a big business; and while he may understand how to manage work economically in a large shop, yet in his own shop he is so handicapped by lack of capital, proper tools, and unskilled workmen not trained to his line of work, that he cannot complete work in as cheap a manner as the older established shops. It will mean several years of hard work, and several years of self-denial, frugal living and economy before he can get his shop on a proper self-supporting basis.

It would be better for the young mechanic, who contemplates engaging in business, not only to wait until he has learned thoroughly the trade, but also until he knows how to handle work in the cheapest and most economical manner, the best way to handle help to get the most work out of them at the least expense. He should also acquire some knowledge of estimating, keeping the cost of work, how to keep his books of accounts in an intelligent manner, and most important of all, he should wait until he has saved up sufficient capital to buy his neecssary tools and equipment, and he should also have sufficient money left and arrange his affairs at home, so that he can live for the first two years on about one-half the salary he received while working for others. It will take him at least two years to secure the proper experience to manage his business rightly and secure a sufficiently steady volume of business to pay him his full salary out of the profits. In the meantime, he should start out with sufficient capital or arrange his home-affairs, so that he can live on half of his former salary. There will be many losses in business that he did not anticipate, bad times, loss on contracts, bad collections, expenses

of advertising and of conducting business that he could not foresee.

But having started, if he will live economically for the first few years, leaving his profits in the business, building up sidelines, securing new customers and holding them by good service and good quality of work, gradually building up a specialty on one line of work until he has built up a name as an expert in that particular work, giving all his energy and thought to his business, he will in a few years build up a nice business.

He should not only study his business, he should eat business, sleep with business, dream business and talk business. He should let his acquaintances know that he is trying to master his business. Once people know that you know your job they are going to say, "There's John F., he certainly knows what he is doing." And business will come to you. He should know that this is a business man's nation, that business is a pastime of nearly all its people, that business has its pretty problems as well as science.

The successful business man is the one who has an inside understanding of his line, and who can present his argument, creating an impression that the work is in the hands of a master. He knows and makes others know that he knows.

Many a small house has grown to large proportions through the genius and energy of one man.

St. Paul, Minn.—H. Kelly & Co. have been awarded the contract at a price of $125,000 to install the heating plant and ventilating system in the new railroad building, Fourth and Jackson Streets.

Homestead, Mass.—The J. J. Cotter Co. has been awarded the contract for the plumbing and heating to be installed in the new building being erected for the Springfield Lodge of Elks, State and Myrtle Streets.

Grand Rapids, Mich.—A. F. Vallette & Co. have been awarded the contracts for installing the plumbing in Homer Cook's new apartment on Bradley Street and in E. F. McKnight's residence on Jefferson Avenue.

Homestead, Mass.—The Milner Co. has been awarded the contract for the heating in a new factory building being erected for the Skinner Chuck Co., in New Britain, Conn. They also have the contract for the heating in the building being erected at the corner of Main and Liberty Streets for the Liberty Realty Trust, Springfield, Mass.

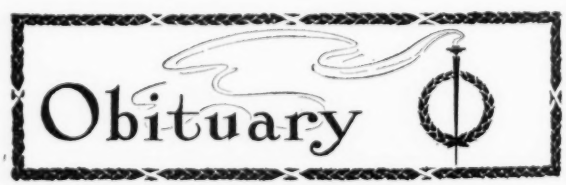
Seattle, Wash.—Rautman Plumbing & Heating Co. has recently been awarded the following contracts: plumbing and heating in the building being erected for Chas. S. Miller, on University Street, $5,200; in the hotel building being erected on the corner of Post and Columbia Streets for the Yesler estate, $14,000; in two additional stories to be added to the Melhorn Building, Post and Columbia Streets, $2,200; in the Struve Building, Fourth Avenue and Pine Street, $1,800; for the William Bremer estate at Bremerton, Wash., $4,000; to install heating in the Ames Building, Second Avenue and Stewart Street, $1,800; to install plumbing in a residence for W. E. Boeing, at the Highlands, $11,000; to install a sprinkler system for the Black Mfg. Co., $4,600; to install a complete fire protection system for the Port of Seattle at Smiths Cove, $16,000. On account of increased business this company has moved to larger quarters, now being located at 118-120 King Street.

START WORK ON PUBLIC COMFORT STATION IN BUFFALO.

A large part of Lafayette Square in Buffalo, N. Y., now resembles a little walled city. The contractors, who will build the first public comfort station in the downtown section of Buffalo, have started work by erecting a tall fence around the area under which the subterranean rooms will be located. The only other comfort stations in the city are located in the parks and in public buildings. The work will cost about $15,600, and it is estimated that it will be finished by May 1, 1915. By that time the comfort station will be ready for use. The station will be in control of the park department, which has had charge of Lafayette Square since it was reduced in size to give a larger outlet to Broadway and Clinton Street. It also has been suggested that comfort stations be built under Shelton Square and at Main and Genesee Streets. The park board probably will wait until the one under construction is completed before appropriating any more money, though it is possible that a budget allowance will be made when the annual department estimates are submitted next year.

The common council of Grand Rapids, Mich., has passed a new ordinance which provides that any man may do plumbing in his own home and on his own property without having a license and without taking the examination, provided his work is approved by the plumbing inspector. This new ordinance goes into effect by December 20. Although there was considerable opposition to the amendment, it was finally carried by a vote of 11 to 9.

Los Angeles, Cal.—The W. D. Newell Plumbing Co. has filed a petition in bankruptcy in the United States District Court. The liabilities of the company total $25,755.36 with assets of $21,884.39.

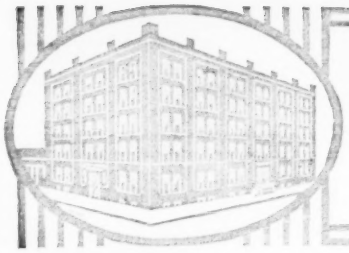


R. T. McCabe.

R. T. McCabe, father of D. E. McCabe, manager of the Chicago branch of the International Heater Co., and of J. B. McCabe, of the Kewance Boiler Co., died at the home of D. E. McCabe on Tuesday afternoon, November 24th. Mr. McCabe was born in Platte County, Ohio, 82 years ago. His home had been in Manteno, Ill., for a great many years until recently, when he came to Chicago to live with his son.

Peter Percival Elder.

Peter Percival Elder, former lieutenant-governor of Kansas, and father of A. P. Elder, past-president of the Kansas State Association of Master Plumbers, died November 19th at Ottawa, Kas., at the age of 91 years. He was a delegate to the Osawatomie convention which organized the Republican party in Kansas. President Lincoln named him Indian agent for the Osages in Kansas and from his charges Elder organized a regiment to fight for the Union in the civil war.



Among the Wholesalers and Manufacturers

COMPANIES RECENTLY INCORPORATED.

The Franklin Controlling Valve Co., of Franklin, O., has been incorporated with a capital of $10,000 to manufacture plumbing specialties. The incorporators are Howard Fielder, D. W. Fielder, E. M. Thrickield, C. J. Miller and L. G. Kennett.

The Sanitary Equipment Co., of Cleveland, O., has been incorporated with a capital of $10,000 to manufacture plumbing specialties. The incorporators are: P. H. Gage, I. H. Lee, C. J. Camp, W. G. Radcliffe and I. A. Ross.

WILL MANUFACTURE ENAMELED SANITARY WARE.

The Columbia Sanitary Mfg. Co., of Louisville, Ky., has been incorporated with a capital of $100,000, to manufacture iron castings and enameled sanitary ware. The new company has broken ground for an iron foundry, 200 by 100 feet, and an enamel shop, 100 by 90 feet, at Eighteenth and Magnolia Streets, in that city. The officers of the company are: George H. Laib, president; W. G. Probst, vice-president and manager; Philip F. Laib, treasurer, and W. B. Young, secretary.

ST. LOUIS HEATING AND VENTILATING ENGINEERS TO FORM CHAPTER.

Steps are being taken by heating and ventilating engineers of St. Louis, Mo., to form a local chapter of the American Society of Heating and Ventilating Engineers. Application will be made at the coming annual convention of the national organization for permission to establish a local branch. The new chapter will take in members from the neighboring territory in and about St. Louis, and it is anticipated that its official name will be the Missouri Chapter. Headquarters will be established in St. Louis.

LARGE CHICAGO WAREHOUSE FOR AHRENS & OTT MFG. CO.

The Ahrens & Ott Mfg. Co. has recently closed a contract with the William Hale Thompson Estate for the construction of a large warehouse on the west side of North Peoria Street, between West Madison Street and West Washington Boulevard, in Chicago, to be occupied by the Ahrens & Ott Mfg. Co.

This is one of the most interesting developments of the recent past as it means the expansion of an already large concern by the invasion of new territory and is indicative of the confidence of manufacturers in the future. The Ahrens & Ott Mfg. Co. is a Kentucky corporation with headquarters in Louisville. Heretofore its activities have been confined almost to the South with branches at Nashville, New Orleans, Houston, San Antonio and Fort Worth. The present move is a kind of invasion of the North. The company's close alliance with the Standard Sanitary Manufacturing Co. is well known. The present move in Chicago is only a step of the allied interests in their policy of trade expansion and the economical distribution of plumbing and heating supplies.

The site comprises the plot fronting east 184 feet in North Peoria Street and having a depth of 116 feet. The property is 116 feet north of West Madison Street and 116 feet south of West Washington Boulevard. There are 16-foot alleys on both sides and a 20-foot alley in the rear. The estate proposes to erect immediately upon this land, a seven-story and basement building of standard mill construction for which plans have been prepared by its architect, A. S. Alschuler. The construction will begin at once, the buildings to be completed by April 1.

The Chicago business of the Ahrens & Ott Mfg. Co. will remain in the able hands of Charles C. Stringer, who has been the company's local manager from the beginning of its entering the field having Chicago as a center.

EQUIPPING ADDITION TO PLANT OF THE ENTERPRISE BRASS WORKS.

The Enterprise Brass Works, of Muskegon, Mich., is equipping an 80x150 foot addition to its present large plant in that city. The new quarters will be ready for occupancy on or about January 15th, when the services of at least one hundred more men will be necessary. The plant will then operate on a double-output scale.

ERA OF GREAT PROSPERITY AT HAND.

Steel Mills and Mines Resuming Operation. Automobile, Wagon and Packing Concerns Get Orders For Millions of Dollars' Worth of Products.

"The new world firm—We, Uncle Sam & Co.—has world trade at its feet, dominance in trade, in manufacture, in world finance and the friendship of all nations." Thus spoke H. H. Merrick, head of the credit department of Armour & Co. His position which places him in personal contact daily with practically every business center on the commercial map, permits him to speak with authority.

"It comes home to us at this time," said he, "that our present is safe, our future certain—that you and I and the other fellow, as parts of the U. S. A., possess the greatest opportunities in the world. Down with the narrow-minded calamity howler and the pessimist. Depression in some lines is more than counterbalanced by the boom in other lines. The pendulum is on the upward swing—October export trade was over $60,000,000 as against $16,000,000 in September and as against a debit balance of $20,000,000 in August.

The steel mills at South Chicago and other parts of the country are resuming operations and putting thousands of men back to work. The return of prosperity is

being noticed in a number of other great industries from coast to coast. In the three months since the war started, Europe has placed contracts in the United States to the amount of $264,304,265. Some of the chief ones are as follows:

The Bethlehem Steel Company and the Fore River Shipbuilding Company have received contracts for field guns, ammunition and army supplies and submarines to a value of	$200,000,000
In September alone exports of foodstuffs increased	29,704,265
Harness has been ordered from South Bend, Ind., to a value of	6,700,000
The Studebaker Wagon Company, South Bend, Ind., built wagons for England worth	6,500,000
New York refiners have sold in ten days 400,000 barrels of sugar, valued at	6,000,000
St. Louis is to furnish 20,000 horses, costing	5,400,000
The Ford, Packard and Federal Automobile Companies have sold to the warring powers 3,500 motor trucks, with a value of	4,250,000
The Robin Hood Ammunition Company, of Vermont has received an order for cartridges to a value of	2,500,000
The Baldwin Locomotive Works has begun building locomotives for Russia to cost	1,500,000
The Strauss Saddlery of St. Louis will make 25,000 saddles, valued at	750,000
Pittsburgh will make for France shoes valued at	650,000
Reading, Pa., will furnish 600,000 hospital shirts, worth	350,000

In addition to the automobile concerns named above, nearly all manufacturers of motor trucks have contracted for their entire output. Drug and hospital supply firms are also working overtime to fill orders for the armies.

HOW TO SECURE TRADE IN PLUMBING AND HEATING GOODS IN SOUTH AMERICA.

N. J. Wiener, manager of the sanitary and tiling departments of Juan Jose Drysdale & Co., one of the leading jobbers of plumbing and heating supplies in Buenos Aires, Argentine, in a letter to "Domestic Engineering" refers to the depressed conditions in that country at the present time caused by the European war, but expresses himself most hopefully about the future, as follows:

"A lot of trade in plumbing and heating goods will be done here in the future. Sewerage systems are gradually being installed throughout the country. Thousands of antiquated houses will be torn down and replaced by modern buildings. Buenos Aires will be remodeled. Houses are being built and more are being planned on the new Diagonal Avenues, a view of one of which is shown herewith.

"If the American manufacturer intends to get a share of the business in Argentine, he must be educated to this market, and he must be willing to pay for his education. To be able to do business here, he must study the territory, the conditions, the life and customs and needs of his prospective customers. He must give them what they want and not what he desires them to buy. He must be able to meet them financially, according them terms somewhat similar to those granted by British and German manufacturers. The establishment of branches of American banking institutions in Argentine will make this possible.

"If the American manufacturer wants to do business here when the time is ripe, he had better look over the field, getting his information at first hand. Don't send down a cheap or mediocre salesman. Would you have that kind of a man represent you in the States? Don't send a man who does not speak Spanish. But, above all, beware of sending along persons of Spanish origin who have been in the States long enough to acquire a knowledge of English, and who translate from English into Spanish with the aid of a dictionary. If you send anybody

A Square of One of the New Diagonal Avenues in Buenos Aires Showing Temporary Arches for Illuminations on a Holiday.

send an American. He works better, both for you and for your country. You want a man who knows not only the language of the country he is trying to do business with, but the line he is handling. And it would not be at all against his interests if he were to have a slight knowledge of the goods made by European competitors. Of course, the latter cannot be expected, as it is a fact that some of the United States manufacturers of sanitary goods do not know themselves what is going on in Europe.

"The export packing of sanitary goods is a highly interesting and important item. The Germans, I believe, have the reputation of being the best packers for export. As far as plumbing goods are concerned, I know a few manufacturers in the United States whose packing, after years of study and constant improvement, is as near physical perfection as can reasonably be expected. With the American manufacturer who has never exported to distant markets, the question of packing will, I dare say, be somewhat of an experiment for a little while, until time and study and complaints will overcome such defects as may have existed. In conclusion, for the American manufacturer who is looking to establish export relations with the Argentine, and who is not looking for immediate results, but desires a slow but sure entrance in and hold on the market, now is the time to begin."

INTERESTED IN NON-SYPHON TRAPS.

T. C. Tonge, secretary of the Board of Health, of Paterson, N. J., writes that the Board would like to receive samples of non-syphon traps, or pamphlets illustrating and describing same. It is the intention of the Board of Health to approve certain non-syphon traps for use in that city, and in order to do this the Board or its Sanitary Committee will examine all the traps received.

Personal Mention

Chas. D. Parker, treasurer of the United States Water & Steam Supply Co., Kansas City, Mo., visited the Chicago trade this weeek.

Francis T. Baker, president of the George H. Tay Co., of San Francisco, passed through Chicago this week and called on some of his friends.

John L. Sullwold, president and secretary of the Western Supply Co., of St. Paul, Minn., was in Chicago early in the week and called upon some of his friends in the trade.

Herman C. Miller and M. O. Clark, of the plumbing and heating firm of Hineline & Co., of Minneapolis, Minn., were in Chicago in the early part of this week. They reported business good with the Hineline concern.

John K. Frye, of Pittsburgh.

John K. Frye, president of the Pressed Metal Radiator Co., Pittsburgh, Pa., whose likeness we have the pleasure of presenting herewith, is one of the well-known and well-liked manufacturers of the U. S. A. His friends are a unit in attributing his concern's success to the aggressive and honorable policies which he has maintained.

George L. Miller, who has recently been made sales manager of the Buckeye Pump & Mfg. Co., Columbus, O., was heard to express himself rather frankly the other day regarding the plumbing fraternity. He said that he has found during his business careeer that plumbers and fitters are as desirable and reliable a class of business men as are to be found in commercial circles anywhere. He states that since his entry into the manufacturing world business with his company has been fine and "then some."

E. M. Larson, master plumber and fitter, Madison, Wis., spent several days in Chicago this week, visiting the supply trade.

E. Lippe, heating and ventilating engineer of the Ahrens & Ott Mfg. Co., Chicago, attended the football game at Lafayette, Ind., on Saturday, Nov. 21, and saw the line-up of the Hoosier boys—Indiana and Purdue Universities.

R. Vessey, who has been on the selling force of the Paragon Brass Mfg. Co., of Cleveland, Ohio, until very recently, has just been made sales manager of Chamberlain-Haber & Co., of that city. Mr. Vessey is known to many in the trade as Bob, and his broad acquaintance and popularity is helping him greatly in his new position.

J. A. Ostrom, treasurer of the Kerosene Utilities Co., Chicago, is recovering from the effects of an automobile accident which he was the victim of some ten days ago. Mr. Ostrom was struck down on Michigan Avenue by a machine driven madly along by an auto thief, who was finally captured as he reached the north end of the boulevard.

After a two weeks' sojourn in Georgia, Alabama and Tennessee, "Sunny Jim" Doherty, western sales manager of the Utica Heater Co., returned to Chicago a few days ago looking as spry as a frisky colt. It appears that the sunshine of Dixie took all the "glooms" out of "Jim's" constitution and even the murky skies of Chicago havn't damaged the famous Doherty smile that won't and can't come off. He reports business in the South brisk and on the upward trend.

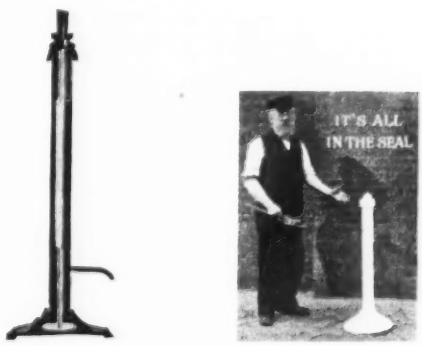
Elmer E. Stack, president of the Stack Heater Co., Boston, Mass., spent a day in Chicago this week on his way to Minneapolis where he will attend the annual convention of the National Commercial Gas Association which opens in that city November 30th.

J. H. Lehman, president of the E. W. Fisher Co., Cleveland, Ohio, is giving much serious thought to the subject of the hoof and mouth disease, as it now exists in Ohio. Mr. Lehman has tramped the wilds of Canada at will in quest of big game and has brought down the game. But hunting big game in the Canadian wilds failed to present the difficulties that Mr. Lehman met with the other day when he planned a few days rabbit shooting down in Ohio. How was he to know that a quarantine was going to be placed on the territory adjacent to Ashland, Ohio, when he expressed $200 worth of hunting equipment to that town with the intention of following it the next day?

William M. Kingsbury, heating and ventilating engineer of Cleveland, Ohio, is again on the job and almost in perfect form after suffering for a number of weeks from a dislocated shoulder. Mr. Kingsbury has a hobby, namely, bathing, and he has made records as a high diver. While at a Michigan resort a few weeks ago he took a real September Morn dive without realizing just how close the bottom of the lake was to the surface, with the result that he was disabled for several weeks.

FOLDER ON VACUUM HEATING ISSUED.

The Vacuum Heating Co., manufacturers of vacuum specialties, with main offices and warehouse at Juniper and Cherry Streets, Philadelphia, Pa., have just issued an interesting folder describing the Trane mercury seal system of vacuum heating. The seal, which is shown in the accompanying cuts, is said to be a most effective heating

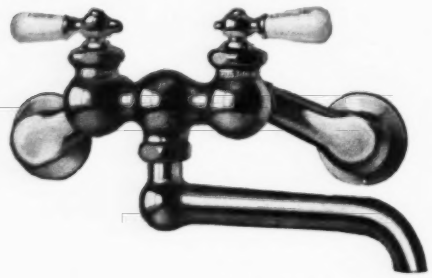


Trane Mercury Seal and Its Trade Mark.

device. By its use, it is claimed, that a partial vacuum may be produced and maintained in a "steam," "vapor," "atmospheric" or "modulated" system of heating, thus greatly multiplying the volume of steam, with a corresponding effect in the heating result, and yet with a smaller fuel consumption. This heating specialty is marketed under the trade mark "It's All in the Seal," shown herewith. Parties desiring folders on this subject are requested to write the company at the above address, mentioning "Domestic Engineering."

A CHRISTMAS SUGGESTION.

"A Christmas Suggestion, Somewhat out of the Ordinary" is the title of a folder just issued by the Chicago Faucet Co., of 313 South Clinton Street, Chicago, for the purpose of distribution by master plumbers to their respective customers. The folder illustrates and describes



The "Classic" Quaturn Faucet with Swinging Spout for Kitchen Sink.

the "Classic" Quaturn combination sink faucet, shown herewith, which is said to make an ideal Christmas present for any man to give his wife or his mother. Quantities of this folder can be obtained by any master plumber from the above-named company upon application, mentioning "Domestic Engineering."

BURGLARS CARRY OFF RADIATOR VALVES.

Burglars recently visited the western offices of the Utica Heater Co., 218 Kinzie Street, Chicago, and made away with two hundred radiator valves and union elbows valued at over $160. The entry into the offices was made by breaking one of the front windows. The police were notified of the robbery, but no clews have been obtained so far.

The Metal Market

Advance in Prices on Iron.

The low prices which were recorded a fortnight ago stimulated business to such an extent that the blast furnace interests in the Buffalo territory advanced quotations. Great interest has been shown in the cast-iron pipe market, where prices are unusually low. In fact, those conversant with the situation cannot recall any time in the last twenty years when so attractive quotations were made for pipe as at present. The City of Boston has just awarded contracts for about 4,000 tons of pipe, the City of Athol, Mass., is in the market for a fair tonnage, while various small cities and municipalities have bought pipe, not because they needed it, but because they had the money in hand and prices were low. This will mean extensions in outlying districts where it has been impossible to make them before, and will mean many houses being provided with public water facilities where heretofore they have had to get along with private supply. The advance in price in pig iron shut off the buying demand, and the market is now at a standstill. However, it is evident that this will not last for any length of time, for some business has developed in steel mill construction. About 1,500 tons of steel shapes will be required on the new cotton terminal at New Orleans. The Government is inquiring for a thousand tons of plate for oil tanks to be located at various points, while there are few export orders in the market. The railroad business still lags, but the inquiry of New York Central for next year's requirement of rails, is of interest. It is not believed that the railroads will buy a large quantity of rails until the Interstate Commerce Commission hands down its decision. Prices on pig iron are as follows:

No. 2 X Northern Foundry, New York	$14.25 to	$14.50
No. 2 Southern Foundry, Birmingham		10.00
No. 2 Southern Foundry, Cincinnati	13.00 to	13.25
No. 2 Southern Ohio Coke, Cincinnati	14.25 to	14.75
No. 2 Northern Foundry, Chicago	12.75 to	13.50

A Little Boom in Copper.

The copper market has been noted for its sudden spurts of activity in the past, but nothing surpassed the advance of last week. Starting at the low figure of 11.20 cents for electrolytic, New York, copper advanced day by day almost hour by hour, until 12.50 cents was paid. There was a large demand, probably amounting to between 50,000,000 and 100,000,000 lb., all of it from domestic consumers. Foreign business has been transacted in a different way. While all this copper was for domestic consumption so far as actual manufacture was concerned, it is too much to say that its ultimate use is for American interests, for some of it went into ship sheathing to be used on foreign vessels. Other copper sheets made fire-box linings for locomotives. Still others have gone into cartridges which will be used on the battlefields of Europe. In addition to the demand for this kind of material, the announcement that the Chicago, St. Paul & Milwaukee Ry. would electrify a portion of its lines and spend about $13,000,000 doing it was regarded as a most hopeful sign. Prices of copper average 12.50 to 12.75 cents, New York, for electrolytic, and 13 cents for prime Lake.

Tin Prices Advance.

When the German cruiser "Emden" was sunk, it was believed that the troubles of the tin trade, as far as securing supplies from the Straits were concerned, were over. Unhappily, it is not so. The Turks are likely to prevent traffic through the Suez, and tin may be tied up in the Red Sea for some time, and perchance may have to come across the Pacific through the Panama Canal and by that route to either New York or London. In any event, it will disorganize transportation and make supplies less regular. Tin in warehouse is selling at 34 to 35 cents, New York.

Lead.

The market is dull and without change at 3.90 cents, New York, and 3.80 cents, St. Louis.

Spelter.

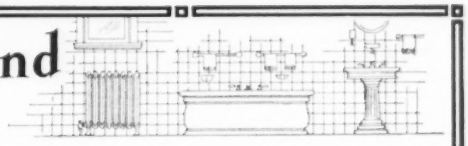
There is no change in spelter, stocks in New York being quoted at 5.20 cents and in St. Louis at 5.05 cents.

Old Metals.

New York dealers' buying prices are all nominal as follows:

Strictly crucible copper	$10.50 to	$10.75
Light copper	9.00	9.25
Uncrucibled copper wire	10.00	10.25
Uncrucibled heavy copper	10.00	10.25
Heavy brass	7.50	8.00
New brass clippings	7.75	8.00
Cocks and faucets	8.25	8.50
Light brass	6.00	6.25
Solder joints	7.00	7.25
Heavy lead	3.50	3.60
Tea lead	3.12½	3.25

Among the Plumbing and Heating Contractors



Illinois

Chicago and Vicinity.

Buildings which will attract people to Chicago instead of New York or European cities were advocated recently by Building Commissioner Henry Ericsson. He said that as Chicago is leading New York in the amount and value of buildings, he wished to see it lead in everything else. "During the month of October," he said, "Chicago lead New York in the value of buildings erected by more than $3,000,000. The records of the month show that the value of buildings erected in New York during October was only about $4,000,000, while in Chicago the figure reached more than $7,000,000. In view of this fact, as well as others which show the lead of Chicago over other American cities, I feel that some monument should be erected which would impress upon the world, the wealth, industry, and greatness of our city." The buildings commissioner advocated that the citizens of Chicago should contribute for the erection of a monumental building in some convenient part of the city which would attract the attention of the world. He mentioned the Eiffel tower of Paris as an illustration of a type of structure that could be built to attract tourists to Chicago.

Heintz & Rasmussen, 1127 Argyle Avenue, have secured the heating contract for a three-flat building to be erected at 4711 North Talman Avenue.

W. A. Marsdorf, 108 Eighty-fifth Avenue, Maywood, will install the plumbing fixtures in a shop and office to be built at Lane and Fourth Avenues, in that suburb.

The plumbing for several flats to be erected at 4533 North Kimball Avenue, will be installed by E. C. Oakes, 3418 Fullerton Avenue.

F. P. Schuster, of 751 North Clark Street, is back in the harness again, having recently returned from a vacation of several weeks at West Baden, Ind. He was accompanied by Mrs. Schuster.

That noble bird, the stork, flew over the home of Edward L. Erman, the junior member of the firm of Erman & Co., 612 East Forty-Seventh Street, and deposited a seven-pound baby girl a few weeks ago. Mr. Erman is receiving the congratulations of his many friends in the trade.

Michigan

Detroit and Vicinity.

Conditions in the plumbing industry locally are at a standstill; that is, there is no boom, and most everybody seems just about able to keep going. However, there is a tone of improvement seen in the horizon and the master plumbers and steam fitters believe that it won't be long before there will be a "grand revival." Leading bankers and manufacturers expressed themselves during the past week to the effect that they felt things easing up financially and that the immediate future looked brighter than it has for some time. At this particular season of the year, plumbers and steam fitters do not look for any enormous business; if they keep fairly busy, they are satisfied, and suffice it to say, such is the feeling in Detroit. As previously reported, the fact that contracts will be let soon for several million dollars' worth of new buildings to be erected for municipal purposes is bound to prove a stimulus to the plumbing industry.

James W. Partlan, plumbing and heating contractor, 51 Park Place, Detroit, suffered a broken collarbone and severe body bruises on Friday afternoon, November 20, when his automobile was struck and pushed 75 feet, then tossed up on the steps of a house by a street car at John R Street and Adams Avenue, which is one of the most dangerous crossings in the city. That Mr. Partlan escaped death was almost a miracle. He is confined to his home and from the very latest reports is slowly but surely on the road to recovery.

Other Cities in the State.

When the Sproul-McGurrin Co., of Grand Rapids, moves into its new location in the Farr Building, Division Avenue and Cherry Street, the electric fixture department will be discontinued. The plumbing and heating business of the firm has so increased as to demand its entire attention.

Fire, on November 20, damaged the building occupied by William B. Chatterson, plumber, Pontiac, Mich., and caused a loss of about $500, fully covered by insurance.

John Vradenberg has purchased the plumbing business of O. N. Dybvig, Whitehall, Mich., and is continuing same under his own name.

Massachusetts

Members of the Master Plumbers' Association of Boston and vicinity are making preparations for a big time on Saturday evening, December 5, when an open meeting is to be held at the Association's rooms, 24 Hayward Place, Boston. President George Smith, of the Massachusetts State Association, and the other state officers, will be the guests of the evening and invitations have been extended to all master plumbers in the vicinity of Boston, whether association members or not, to be present. President Poole of the Boston association heads the committee which is arranging the affair. In addition to speeches by the state officers, Henry F. Baillet, of Newark, New Jersey, who is an expert on overhead expenses and kindred subjects, is to address the gathering.

Chester A. Hickman, of Brockton, a member of the common council of that city, has purchased a half interest in the Alden Sheet Metal and Plumbing Co., and has assumed active management of the business, which he will carry on in connection with his roofing business.

Fred McClean has been given the contract for furnishing heating and ventilating equipment for Springfield's new public comfort station; consideration $1,992.

The contract for installing a heating and ventilating system in the new parochial school for St. Joseph's Parish at Worcester has been awarded to Nicholas J. Smith.

Twenty-four master plumbers from Winchester, Wakefield, Melrose, Stoneham, Woburn, Reading, Lexington and Arlington, Mass., attended a meeting in Wakefield last week at which definite steps towards the formation of the Master Plumbers' Association were taken. It was voted to call the new organization the South Middlesex Master Plumbers' Association, and Jonas A. Larraway, of Winchester, was made chairman of a committee to draft by-laws. This committee will report at a meeting at Winchester, December 18, at which time officers will be elected and the work of the association really started. With the coming of the new organization, two smaller associations, the Melrose-Wakefield Association and the Winchester Association, the latter taking in Winchester, Woburn and Stoneham, will be abolished. Efforts are to be made to secure permanent rooms in Stoneham, which is the most centrally located of the several cities and towns and easily accessible for all. Much enthusiasm is being shown and it is expected that the charter roll will number at least thirty.

New York

The value of pleasant relations between employer and employe as a business asset is well emphasized in the plumbing and heating business of Voletsky & Jarcho at 1538 Pitkin Avenue, Brooklyn, N. Y. When Harry Voletsky and James Jarcho entered the trade eleven years ago they determined upon a policy of making assets of

Establishment and Working Force of the Plumbing and Heating Firm of Voletsky & Jarcho, in Brooklyn, N. Y.

their employes instead of mere mechanics. This was done by creating and cultivating a condition which made it possible to retain their services through long periods. The welfare of the man in the ditch is as much the concern at their establishment as the "inclosed please find check" correspondence, that enters the office. The result is that today they have forty-five boosters on their payroll. Most of these men have learned the trade in the V. & J. shop. In the picture, which was taken in front of the shop are: Edward Schwartz and Michael Jarcho, who have been on the payroll since the shop opened. Morris Greenberg and Charles Lechleitner have stuck during the past eight years, Jack Diegan, one of the foremen, who is considered one of the best mechanics in New York, has served the house for a long period, and Harry Cohen, in the center of the group, who as secretary has wrestled with the company's books for ten years.

Lichtenstein & Klein, of New York City, formerly on East Seventy-Eighth Street, have secured larger and better quarters at 176 East Seventy-Seventh Street and hereafter will conduct their business at the latter place.

J. F. Barry, of 565 West 171st Street, New York City, is plumbing the new Catholic High school of St. Regis Parish on Madison Avenue.

Philip C. Kiernan has moved his plumbing business from Home Street, The Bronx, to 180 East Seventy-Eighth Street, New York, closer to the center of Gotham's activity.

Rhode Island

The Rhode Island state board of control has awarded several of the sub-contracts in connection with the new dormitory to be erected at the state hospital for the insane. The plumbing contract was awarded to E. J. Sullivan, whose bid was $10,820; the heating contract went to the General Fire Extinguisher Co. for $14,194, and the electrical contract was awarded the Rhode Island Electric Equipment Co. for $3,674.

District of Columbia

The Association of Plumbing Inspectors of the District of Columbia, which is an informal society consisting of the present employes of the Washington plumbing office and those who have been connected with it in the past, have arranged to give their annual entertainment and luncheon to the master plumbers of the District of Columbia at Elks' Hall on Monday evening, December 14th, and it is confidently expected that several hundred will be present.

Pennsylvania

Philadelphia and Vicinity.

Hoben & Doyle, Twenty-first and Pine Streets, have been awarded the plumbing and heating contract for the Philadelphia Electric Co.'s power house; consideration, $2,500.

J. A. Quinn, Frankford, Pa., has been awarded a contract to install plumbing and heating in twenty-four houses for the Simpson estate.

Hunter & Casselman, 3510 Kensington Avenue, have been awarded a contract to underdrain ten houses in Kensington, Pa.

J. W. Wilson, Darby, Pa., has been awarded the contract to install plumbing and heating in four houses for H. B. Cox, Collingdale, Pa.

E. Yeates, Darby, Pa., will install the plumbing in the new schoolhouse to be erected there.

A. T. Phillips, Moore, Pa., has been awarded a contract for heating the Edgewater Country Club. William McCoach, 1607 Sansom Street, Philadelphia, has the plumbing contract.

M. D. Gould Co., Moore, Pa., has just opened up a branch office and shop in Swarthmore, Pa., and would be pleased to receive catalogs from manufacturers and jobbers of plumbing and heating goods.

Bleyler Marker, Chester, Pa., have been awarded the contract for heating and plumbing the Chester Silk Mill.

The accompanying cut shows an attractive view of the show-room of the plumbing and heating concern of E. P. Saeger & Co., of 131 North Franklin Street, Allentown, Pa. Mr. Saeger is one of the influential citizens of that

Showroom of E. P. Saeger & Co., at Allentown, Pa.

city and one of the most prominent men in the trade in that section of the country. The company over which he presides has finished some of the most extensive jobs of plumbing installation in and about Allentown.

Washington

Seattle and Vicinity.

A gain of $2,739,475, or about 33 per cent, in new construction during the first ten months of 1914, as compared with the corresponding period during 1913, is shown in the statistics compiled by T. Josenhans, superintendent of buildings, Seattle. The figures for 1914 are $11,137,190. The month of October is also reported in the increase column over the same month in 1913 and 1912.

According to indications, the month of November will equal, if not exceed, the month of October. With but few exceptions the local men of the trade, not saying anything of local business men and manufacturers, agree that the present condition of affairs comes as a distinct and agreeable surprise to them. At the opening of the European struggle, depression settled over the entire Northwest and the ever-present pessimist did not forget to grasp his opportunity and declaim in strident tones, "I told you so." However, the gloom has lifted and today authorities agree that the Pacific Northwest is on the verge of a boom from a building, constructing and general advancement standpoint.

The local plumbing and heating concerns, especially the larger ones, are as busy as the proverbial bee. Several of the largest jobs started in the past few years were awarded during October. The last statement applies to contracts let in both the states of Oregon and Washington.

Residence contracts in Seattle have dropped off to some extent, therefore the smaller contractors are not as busy as they were in the late summer or early fall. With but few exceptions, however, plenty of small work is reported on hand.

A few of the larger contracts awarded throughout Washington during the past two weeks are:

G. J. Tompkins, plumbing and heating contractor, of Republic, on a bid of $7,410 has been awarded the contract for the installation of a heating system and plumbing fixtures in the new high school. The general contract for construction is held by Henry Van Laken, of Coeur d'Alene, Idaho. Sweatt & Diamond, of Spokane, prepared plans for the structure which will cost approximately $36,000. The building will be three stories in height, of brick, stone and concrete construction.

James Cain, Portage, on a bid of $25,000 has been awarded the contract for a new school house at Burton, to be built of hollow tile and Persian brick. It is expected bids for both plumbing and heating will be received until about the middle of December.

E. E. Trommald, 940 Tacoma Avenue, Tacoma, will receive bids until December 10 for the general and subcontracts, including plumbing, heating, ventilating, wiring, etc., for a two-story brick store and office building to be built in Enumclaw at an estimated cost of $30,000. Heath & Gove, National Realty Building, Tacoma, architects, prepared the plans and specifications.

The Monroe & Haskill Plumbing & Heating Co., Bellingham, were recently awarded the contract for installing plumbing in the proposed Fourteenth Street school building. The bids for heating were rejected and the secretary of the school board will immediately readvertise for new bids.

The State Historical Society, Tacoma, will shortly receive bids for the plumbing and heating in the Ferry Museum to be built on the corner of North Third Street and Cliff Avenue. The contract for constructing the first unit of the structure has been let to J. Hansen, care Bullard & Hill, architects, National Realty Building. The structure will be of stone and concrete construction and will cost about $40,000.

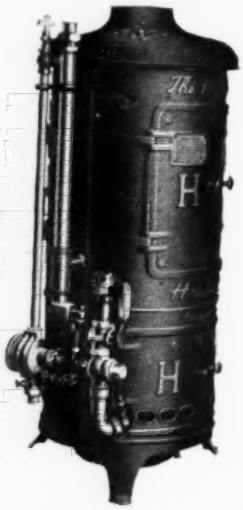
V. W. Voorhees, Inc., Eitel Building, Seattle, has practically completed plans for the construction of a three-story and basement store and office building to be erected on the corner of Leary Avenue and Market Street, for Louis Anderson. The building will be of brick and concrete construction and it is estimated that it will cost about $45,000.

One of the largest contracts which has been let in Seattle since the awarding of the contract for the construction of the forty-two-story L. C. Smith Building, was let recently to the Grant Smith & Co., Henry Building. It is for the construction of the nine and sixteen-story Sears-Roebuck Co.'s Building which is to be built at once on the corner of Utah and Lander Streets. Their bid for the work approximates $650,000. The bids for both plumbing and heating are being received, at this time, by Architect George Nimmons, Washington Hotel.

P. A. Costello, of Seattle, representative in the Pacific Northwest of the S. T. Johnson & Co.'s heating department, has submitted proposals to the Seattle school board for the installation of a low pressure oil-burning equipment in the Ballard high school. The proposal includes two steam boilers for heating, ranges for the domestic science department, and forges and furnaces for the manual training department. Mr. Costello has also submitted bids for equipment for the new high school now under construction at Bellingham. He recently secured contracts for heating plants to be installed in the Carolina Apartments in this city and the Christopher & Blythe Building at Bellingham. Christopher & Blythe will hereafter act as the Bellingham agents for the S. T. Johnson & Co. heating and plumbing lines. Appling & Griggs, of Tacoma, have taken the agency for that city.

The municipality of Grandview has asked for bids for the machinery to be installed in the new pumping plant. An election will be called to vote on the issue of an additional $100,000 for the completion of the work.

Another Hoffman Triumph



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The Latest Improved "HOFFMAN" is the most efficient and economical automatic gas water heater made.

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Long Water Gauge
Special Moisture Proof Motor
Pump, Motor, Tank, Automatic Electric Controller and All Fittings Assembled Complete As Shown and Mounted On One Solid Cast Iron Base
Silent and Efficient Drive Constating Flat Belt to Pulleys and Slow Speed Gears
Renewable Bearings
Special High Grade Fittings
Positive Air Charging and Priming Device (Patented)
Strong Box Shape Cast Iron Frame
Slow Speed Pump Brass Fitted Fully Accessible

We manufacture and list 144 different Paul Water and Electric Light Systems.
Write for Catalog 5202.
Fort Wayne Engineering & Mfg. Co.
Main Office and Factory
Fort Wayne, Indiana, U. S. A.

Branch Offices and Distributors:

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Oregon

Portland and Vicinity.

Several large business contracts, recently signed by Portland Master Plumbers, have done a great deal to make the men of the trade in that city feel that Portland will boom and that the day is not far distant. Prospects for an excellent season next year are very bright. The small shops throughout the state have had a comparatively busy year and the outlook for 1915 is reported to be excellent.

The contract for the installation of a gas heating system in the church under construction at East 25th and Madison Streets, Portland, has been let to the Portland Gas & Coke Co. The plumbing contract was awarded the McCow Plumbing Co., East 25th and Madison Streets.

Fullman & Walker, of Builders Exchange, Portland, on their bid of $11,093 were recently awarded the contract for the plumbing in the $160,000 Couch school building. Bids for this work were opened some time ago, but the award was not made until recently. This is to be a two-story and basement building, of reinforced concrete construction. Besides the twenty-four class rooms there will be a swimming pool, manual training quarters, play rooms, gymnasium, etc. The general contract for construction is held by the Boyjohn-Arnold Co., Panama Building.

Purchasing Agent J. R. Wood, City of Portland, recently received bids for furnishing plumbing fixtures at the headworks of the Bull Run water supply system. It is reported bids for installing same will be received shortly.

D. F. Kearney, general contractor, 581 Kearney Street, will shortly receive bids for the installation of both plumbing and heating in a two-story brick school to be built at a cost of $35,000, on the corner of 17th Street, between Couch and Davis.

The low bid, $111,485, for the construction of the proposed $160,000 Shattuck school in Portland, was submitted by Olson & Johnson Co., Inc., of Missoula, Mont. Their bid has been declared irregular, and it is thought the contract will be awarded to the Boyjohn Arnold Co., Panama Building, Portland, whose bid for the work was $116,975. The bids for heating and ventilating follow: Alaska Plumbing Co., $23,858; J. F. Shea, $23,992; Kendall Heating Co., $23,979; W. W. Cox, $24,162; Jos. McCusker, $25,637; Spinning-Cornell Co., $26,230; W. G. McPherson, $26,750. The bids for plumbing were: Sturges & Sturges, $10,542; J. F. Shea, $10,949; Alaska Plumbing Co., $11,290; Wackrow & Woodhouse, $11,477; Fullman & Walker, $11,500; Williams & Beggs, $11,845; Ruedy Bros., $12,250; Muirhead & Murhard, $14,200.

Forty schools out of one hundred and twenty in Albany county have been standardized in recent months; and will be governed by uniform rules as to lighting, heating, ventilation, plumbing, etc.

Phoenix, Ariz.—The Arizona state board of control is advertising for bids for furnishing water supply equipment for the Arizona Asylum for the Insane.

Phoenix, Ariz.—The Machinery & Electrical Co., which has just been incorporated with a capital stock of $50,000, will carry on the business of installing electrical work, gas and steam fitting, plumbing, ventilating, heating and lighting. The incorporators are: E. A. Trincano, C. E. Scrivner, F. E. Rich and R. M. Ling, all of Phoenix.

Trenton, N. J.—Whelan & Covert, master plumbers, of 1126 South Brook Street, would like to receive catalogs from manufacturers and jobbers.

California

San Francisco and Vicinity.

The opening of the new reserve banks and the general easing up of money conditions has already produced a market for a considerable number of municipal improvement bonds. Practically all of San Francisco's bonds held up by the scarcity of money and high interest rates were sold this week, and the turn of the smaller towns is at hand. This will lead the way to a lot of waterworks construction throughout the coast.

David Gibbs, 654 Fifth Avenue, has secured a contract to install the plumbing and gas-fitting in the new Ira W. Coburn Building, for $2,259.

Otto Kurtz, 445 Stevenson Street, will install the sewering, plumbing, gas-fitting and electrical work in the new Mastick Building on Battery Street. This work will cost about $1,683.

The Southern Pacific Railroad Co. of San Francisco is arranging to erect a number of modern houses of hollow tile construction at various points along its system for the use of its employes. The houses will be built to accommodate from four to ten families, and will be provided with modern sanitation, ventilation, etc.

The Building & Grounds Committee of the Panama-Pacific Exposition Co. is calling for bids for the installation of a temporary boiler plant for the Exposition Auditorium.

The following bids have been submitted for the construction of a water distributing system at the San Francisco National Cemetery on the United States Government reservation: H. M. Putman, $1,937; Kiernan & O'Brien, $1,351; Robert Dalziel, Jr., $1,172; Pringle, Dunn & Co., $999; Eurnham Plumbing Co., $1,097; Mahoney Bros., $1,265; Wm. Bruce, $1,535. .

Other Cities in the State.

The Ott Hardware Co., of Santa Barbara, has completed the installation of the plumbing work in the science department of the Carpinteria Union High School at Carpinteria.

The board of trustees, of Lakeport, has authorized the purchase of thirty-seven meters, and other supplies, for the municipal waterworks.

J. C. Furberg, of Lemore, has sold his plumbing business to A. Tario.

W. A. Boole, of Oakland, has applied for a franchise to lay an eight-inch pipe line from Oakland Harbor to Vernon Street and Bay Place for the purpose of pumping salt water to the Piedmont Baths.

The San Rafael city council has closed a deal with the Pacific Gas & Electric Co. to supply steam heat to the municipal baths for a period of five years at a cost of fifty cents per thousand pounds. It is estimated that during the winter months the requirements will run as high as 662,500 pounds per month. The baths are to be completed before the first of the year.

The labor war that has been under way at Stockton for many months between the Merchants' Manufacturers' and Employers' Association, and the Union workmen shows no sign of improvement. The Mayor's plan for settling the trouble has been refused. A few days ago it was discovered that the drain pipes of the new Stockwell Building, the plumbing on which was done by non-union workmen, had been filled with concrete. The pipes will be taken down and replaced.

Our One-price Policy Protects You

The QUICK-PRESSION PATENTED line of brass goods is a one-price line. We don't make one price to you and then make a lower price to the man around the corner.

Our single price is based on value. It is determined by an accurate system of cost accounting that shows the cost at every step in manufacture.

This policy does two things for you:

1. It establishes a price that is fair and right.

2. It keeps that price as low as possible.

The one-price-to-all policy protects you.

The CENTRAL BRASS
M'F'G. CO. *of* CLEVELAND

Originators and Sole Manufacturers of Quick-Pression Work.

Says the Little Plumber:

CENTRAL BRASS is like Central Quality—clean, new, honest metal all through.

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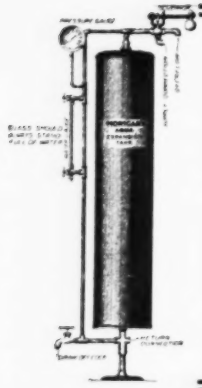

HORIGAN'S
Aqua Expansion Tank

PUTS NEW JOB IN RIGHT, because it lets you inside the money, which is the thing you are after.

CURES THE SICK JOBS, which will give any heating doctor a reputation.

BRINGS BACK TO LIFE the dead ones in a most miraculous manner.

PUTS YOU ON THE FIRING LINE with a full steel armor on from the crown of your head to soles of feet.

YOU WANT IT, because you need it in your business.

"EVERYTHING BELOW STAIRS."

Let us tell you all about it. Write today

Price $11.50 Net

HORIGAN SUPPLY CO.
St. Joseph, Mo.

Crawford Combination

Having lead jaws, is the only vise made that will hold brass and nickel plated pipe securely without scratching or marring.

Lead jaws can easily be removed and remoulded.

Also equipped with steel jaws which will grip firmly any pipe up to 1¼ in. iron size.

Light, compact, easily carried. Can be readily secured to bench, board or door frame.

Every plumber and fitter should have this great labor-saver. No other vise or attachments needed on the job.

Write today for prices.

Joseph H. Young Co.
82 High Street
Boston, Mass.

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You Will Always Use the

"CHICAGO" Condensation Pump and Tilting Tank Receiver

After you know its worth.
Simple, Positive, Economical.
Cuts coal bills in two.
Does away with old - fashioned floats and other troublesome parts.

Write for Descriptive Catalog

CHICAGO PUMP COMPANY **903 W. Lake Street CHICAGO**

The Wentz Thermostat

Built Right—Works Perfectly—Adapted to temperatures ranging from

FREEZING to BOILING

No working parts to wear out. Use one of these valves and you will order them always.

Plumbers will be interested in our new method of installing—it cheapens cost and increases efficiency.

Write for circular and prices.

Wentz Patent

The Wentz-Yoder Mfg. Co.
Cleveland, Ohio

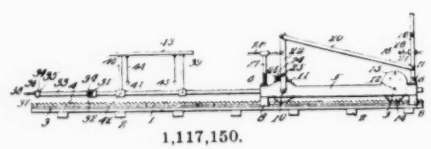
Patents

Plumbing Department.

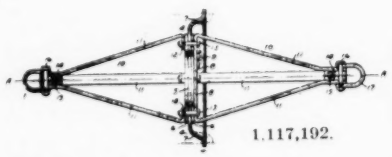
1,117,150. Pipe-Pushing Device. Charles D. Ammon, David City, Nebr. In a device of the class described, a rack; a carriage; a cog wheel on the forward end of the carriage and meshing into the rack; pipe holding means on the carriage; a lever fulcrumed on the forward end of the carriage; means for operatively connecting the lever with the cog wheel; a second lever fulcrumed on the rear end of the carriage and accessible from the rear end of the carriage; and a link connecting the intermediate portion of the second lever with the upper end of the first specified lever.

1,117,192. Sewer-Cleaning Device. John Kelly, Jamaica Plain, Mass. A sewer pipe cleaning device having, in combination, means comprising a pair of plates having a passage therethrough, means for closing said passage, flexible means projecting laterally from between the plates of the first-mentioned means and having an incline toward one side of the latter and adapted to engage the pipe at an abrupt angle thereto for directing the sewage inwardly toward said passage, and manipulating means secured to opposite sides of the first-mentioned means.

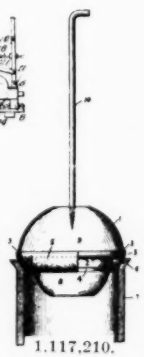
1,117,210. Float Valve. Frederick A. Mathys, Schenectady, N. Y. A float valve comprising a ball lighter than an equal volume of water and having an annular peripheral groove, and an annular concavo-convex rubber band the edges of which are seated at opposite sides of said groove to present an outer convex surface and leaving a space between the surface of said ball and said band.



1,117,150.



1,117,192.

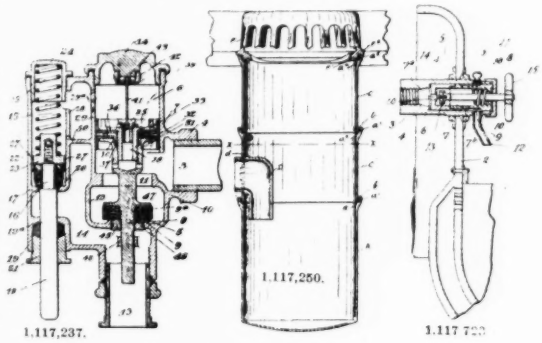


1,117,210.

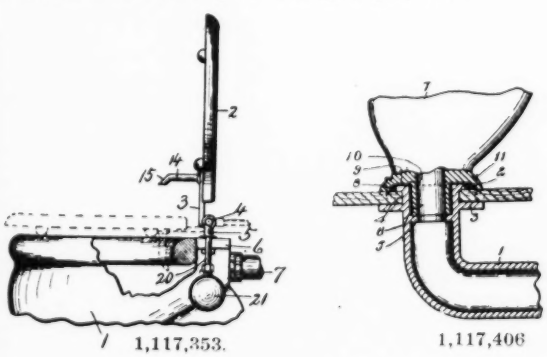
1,117,237. Flushing Valve. Thomas F. Payne, Pittsburgh, Pa. In a flushing valve, a casing having an inlet and outlet ports, a main chamber, an auxiliary chamber having a discharge port and a plurality of openings formed in a wall of the casing and constituting passage ways between the chambers, a valve for controlling the flow of water from the inlet to the outlet, a piston operatively connected to the valves and adapted to successively traverse the passage-ways connecting the chambers, and means for controlling the auxiliary discharge port with respect to the outlet.

1,117,250. Catch Basin. Joseph F. Rothe, Green Bay, Wis. A catch basin having an aperture in one of the side walls, and having notches in the margins of said aperture, in combination with an elbowed trap member

having one leg adapted to fit said aperture and provided with a flange adapted to engage the interior surfaces of the marginal walls of said aperture and to cover said notches, said member being also provided with outwardly projecting ears adjacent to said flange, adapted to pass through said notches and to engage by rotation upon the exterior wall of the cistern, said notches being so located that the lips will pass through them when the other leg of the elbowed member is in a downwardly inclined position and engage the exterior wall when such other leg of said members is in a substantially vertical downwardly extending position within the cistern, whereby said elbowed member may drop by gravity to a locking position, substantially as described.



1,117,723. Faucet. George E. Swyney, Seattle, Wash. A faucet comprising a substantially cylindrical casing provided at one end with an inlet port, an internal shoulder around said port, the opposite end of said casing having a pair of outlet ports spaced circumferentially from each other, a closure for either of said ports, a removable hollow cylindrical plug snugly fitting in the bore of said casing, said plug having inlet and outlet ports, a closure for one end of said casing, said closure engaging said plug and holding it seated on said internal shoulder, said plug formed with a peripheral groove communicating with the outlet ports of the plug and with both of the outlet ports of the casing, a valve for the inlet port of the plug, and means for securing the casing in position.



1,117,353. Water Closet. Julius Engel, Syracuse, N. Y. In combination with a water-closet bowl, a hinged seat therefor having a relatively large opening therethrough, and a water pipe having a discharge nozzle secured to the underside of the seat wholly at the outer side of the opening and having its discharge end facing the interior of the bowl.

1,117,406. Bowl Connection. Joseph Lafrance, Montreal, Quebec, Canada. In a bowl connection means, a

Ever have a customer ask what to use to keep water closets clean? The answer is

Sani-Flush

It cleans entire bowl—the seen and unseen parts, and keeps it white as new, sanitary, odorless.

Cleans where a brush cannot reach.

No scrubbing, scouring or brushing.

SANI-FLUSH is perfectly safe to handle and will not injure bowl or connections.

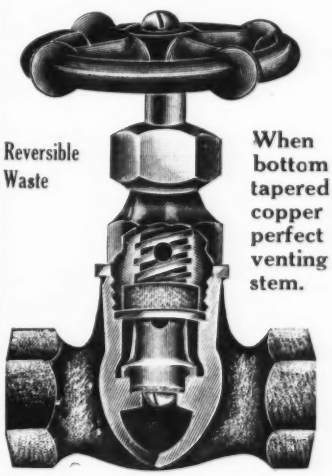
When poured into the water it forms a solution which loosens the deposit in trap by chemical action.

There is good, easy money for you in handling SANI-FLUSH. Sells itself. Universally advertised. Write for details.

The Hygienic Products Co.
Dept. D, 220 Eighth St., S. E.
CANTON, OHIO

The Sterling Compression Stop and Waste

A Valve, Not a Sprinkler



No Springs

Reversible Waste

When fully opened bottom of stem being tapered registers against copper washer, making perfect metal seat, preventing leakage around stem.

Sold Only Thru The Jobbing Trade

Patented

Does not have to be fully opened in order to close waste outlet.

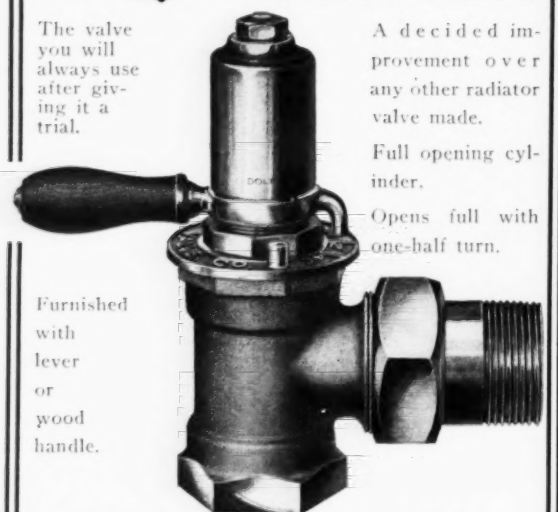
Does not waste while being opened or closed.

Send us a trial order to be filled thru your jobber

The Sterling Specialty Company
NEWCOMERSTOWN, OHIO

The Dole Packless Hot Water Valve

The valve you will always use after giving it a trial.



A decided improvement over any other radiator valve made.

Full opening cylinder.

Opens full with one-half turn.

Furnished with lever or wood handle.

Position of lever handle and indicator shows exact degree of opening—a feature which appeals to every householder. Write for new literature and prices.

THE DOLE VALVE CO.

208 N. Fifth Ave., Chicago

Complete line of Standard Steam and Hot Water Radiator Valves

Absolutely Practical

The Ideal Closet Connection. In all sizes. Sanitary and substantial.

Approved by the Building Departments of Philadelphia, Boston, Buffalo, Brooklyn and other principal cities.

Flange and Connections Patented

Iron or Brass Calking, Flanges, Brass Bolts, Nickel Plated Nuts and Washers furnished with each connection.

This Fitting takes the place of Lead Bend, Brass Floor Plate, Brass Ferrule, 4" Solder Joint and Fittings in Wall.

Saves you money on Material and Labor.

Write today for further particulars.

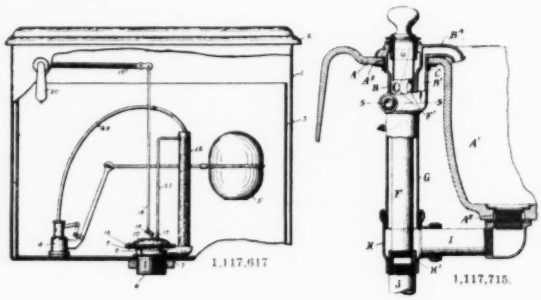
Sanitary Company of America

Main Offices: Linfield, Pa.

New York Representative, Henry W. Letcher, Hudson Terminal Bldg., 50 Church St., New York City

Philadelphia Representative, Jos. L. Fritz, 940 Drexel Bldg., Philadelphia, Pa.

soil pipe fitting in the form of an outlet pipe having a pair of outwardly extending integral flanges at its open upper end forming an annular channel-sectioned recess which is filled by the flooring and also having a short inwardly extending stop flange a short distance from its upper end, a bowl having a floor flange with a recess in its under side completely and freely inclosing the uppermost one of said pair of flanges and also having a downward tubular extension freely depending within the upper end of said fitting and reaching to said stop flange, packing material encircling said extension and completely filling said bowl recess on all sides of said top flange, and means for securing said floor flange to the flooring.



1,117,617. Flush Tank Valve of the Diaphragm Type. Carl H. Zwermann, Kalamazoo, Mich. In a valve of the class described, the combination of an outlet connection having a valve seat, a ring integral with said outlet connection, discharge openings between said ring and said valve seat, an arm extending from said outlet connection and having a discharge passage therein opening into said outlet connection beneath said valve seat, a chamber having a restricted inlet supported on said ring, an overflow pipe carried by said arm the lower end of said overflow pipe opening into the discharge passage, a siphon extending upwardly from said chamber and passing through the side wall of said overflow pipe near the top thereof, the discharge leg of said siphon extending downwardly within said overflow pipe to a point near the bottom thereof, a diaphragm valve forming the bottom wall of said chamber and normally engaging said valve seat, said valve comprising a diaphragm, a disk disposed above said diaphragm and a disk disposed beneath said diaphragm, a rod passing through said disks and said diaphragm, nuts threaded on said rod for clamping said disks to said diaphragm, said rod passing through to top of said chamber, and means for lifting said rod, all coacting substantially as described for the purpose specified.

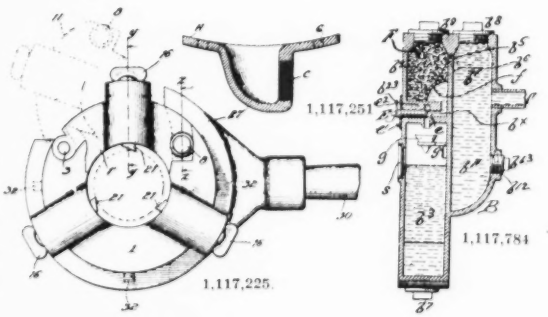
1,117,715. Lavatory Fitting. Willard A. Speakman, Wilmington, Del. A combination one-piece mixing nozzle and waste valve fitting comprising a tubular body enlarged at one end to form a head adapted to seat against a support at the margin of an aperture in the latter receiving said tubular body and having a delivery spout projecting from said head at one side, said tubular body comprising a cylindrical portion adjacent said head externally threaded to receive a clamping nut, said fitting being formed with a waste valve passage extending through said head and body and with a mixing chamber arc-shaped in cross section and partially surrounding said passage, said mixing chamber communicating at its upper end with said delivery spout and said tubular body being formed adjacent its end remote from said head with provisions for securing two supply pipes thereto in communication with said mixing chamber.

1,117,716. Lavatory Fitting. Willard A. Speakman, Wilmington, Del. The combination with an apertured basin slab or like support, of a combination mixing nozzle and waste valve fitting comprising an annular head lying above the fitting with a discharge nozzle spout projecting from the peripheral edge thereof, a tubular part detachably secured to said annular head and forming a housing for a tubular waste valve, a mixing chamber containing part connected at its upper end to said head adjacent said spout and communicating with said spout and extending downward along side of said tubular part through the said aperture and having integral portions at its lower end oppositely curved closely about said tubular part and terminating in bosses with provisions for connecting hot and cold water supply pipes thereto, a nut threaded on said tubular part below said mixture containing part and an elongated washer extending between said nut and the under side of said support, and cut away at one side to clear said mixing chamber containing part.

Heating Department.

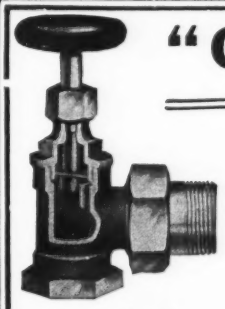
1,117,251. Pipe Fitting. Bror F. Safberg, Barberton, Ohio, assignor to The Babcock & Wilcox Co., Bayonne, N. J., a corporation of New Jersey. A forged steel pipe fitting comprising in one integral piece an elbow having an attaching flange surrounding one of its openings, and the other of its openings in a flat wall lying in a plane substantially at right angles to the attaching flange.

1,117,225. Pipe Cutter. Harry D. Nash, Topeka, Kans. A pipe cutter comprising an annular body adapted to be clamped about the object to be operated upon; a plurality of spaced radially movable carriers mounted in said body; cutters carried in said carriers; and manually adjustable screws rotatably mounted in said body but held therein against longitudinal movement and in threaded connection with said carriers for adjusting said carriers in said body, substantially as described.



1,117,784. Humidifying Means for Use in Conjunction with Heating Apparatus. Addison A. Cardwell, Rye, N. Y. In humidifying apparatus of the character designated, a feed water trap comprising a receiving and settling compartment, a filter compartment, a drip compartment and a discharge compartment, means for supplying a liquid to said first-named compartment above the bottom thereof, the vertical partition wall of the trap having a duct near its upper end, a transverse partition extending from the vertical partition and having a valve-controlled passage, a U-shaped connection between the lower end of the drip compartment and the discharge compartment, and a filter in said filtering compartment supported on said transverse partition.

1,117,277. Heating Apparatus. Samuel G. Supplee, East Orange, N. J. In a device of the character described,



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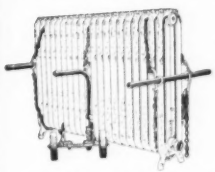
HIGH GRADE
Radiator Valves
All Valves thoroughly tested and inspected before shipment.
Quick-Opening Union Radiator Valve
Capitol Brass Works
DETROIT, MICH.

TO DO MORE WORK IN LESS TIME
is the great problem of modern business.

The steamfitter who is a keen business man will readily see the advantage and practicability of
BUELL'S COMBINED CARRIER AND TRUCK
Saves labor, time and strength. Just the thing for carrying radiators up and down crooked narrow stairways and halls.
Write for details and prices.
BUELL BROTHERS, Fulton, N. Y.

"It's All In the Seal"
The advantages in connection with the
Trane Mercury Seal System Of Vacuum Heating
are due to the efficiency of the
TRANE MERCURY SEAL
It solves the difficulties of both high and low temperatures. Saves fuel. Gives a temperature range of 150 degrees in radiators. Write for details.
VACUUM HEATING CO.
1315 Cherry St. - Philadelphia, Pa.

Patented

Recommend and Install
Logan Radiation
THE BEST
Costs No More Than Any Other
All Standard Sizes, Steam and Water
Ask Your Jobber for Prices or Write Us Direct.
Logansport Radiator Equipment Co.
Logansport, Ind.

As a safeguard against grease-clogged pipes, it will pay you to include the

BOSTON GREASE TRAP

in every kitchen sink installation you make.

Pipes CANNOT clog, as all grease is caught and retained in the BOSTON Trap.

The BOSTON Trap is easily and quickly cleaned and always gives satisfaction.

Write for prices and interesting discounts.

R. ESTABROOK'S SONS
1st and C Streets, SOUTH BOSTON MASS

Ready for Instant Use

The time lost on each job in fitting up an old-fashioned vise bench will more than pay for a

Portable Vise Bench

Besides, this bench can be folded and carried to the job by any boy—saving express charges—and can be set in position and fastened to floor in a few minutes.

Built to last forever.

Order one and you will never use any other kind.

Standard Iron Works
540-50 W. 58th Street
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the **VAPOR** **SYSTEM** Economical

Easiest, quickest, cheapest. Turn any steam heating system, old or new, into a perfect Vapor System with KOALSAVE VACUUM AIR VALVES

PARK ROW BLDG. VALVE COMPANY NEW YORK

Write to-day for full information

"IN UNION THERE IS STRENGTH"

For a closet seat with great strength and extra long life, recommend and install the

UNION GUARANTEED SEAT

It bears the Union Gold and Blue Label—look for it.

M. P. BERGLAS MFG. CO., Fulton and Furman Streets., BROOKLYN, N. Y.

Guaranteed Water Heaters

RUUD Instantaneous Automatic Water Heaters
RUUD Automatic Cottage Water Heaters

6 distinct types and numerous sizes
Write us about them.

RUUD MFG. CO., Main Office, Pittsburgh, Pa.

Of Course You Buy

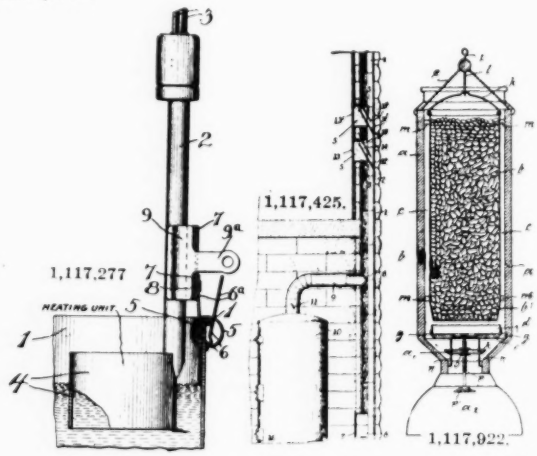
Modern Products

Modern Iron Works - Quincy, Ill.

a liquid container, a heating element arranged to be inserted within said container, and supporting means arranged to engage and be supported upon said container and itself arranged to engage and adjustably support said heating element relative to said container.

1,117,425. Heating System. Franklin H. Neuberger, Jeffersonville, N. Y. In a damper construction of the character described, a pair of baffling plates, a pair of journals for each of said plates, said journals comprising a sliding bifurcated bar formed with slots therein, clamping members passing through said slots for clamping said bars in position, each of said bars being formed with a slot at one end, a pin engaging said bars in said slot, and a rotatable member for supporting said pin.

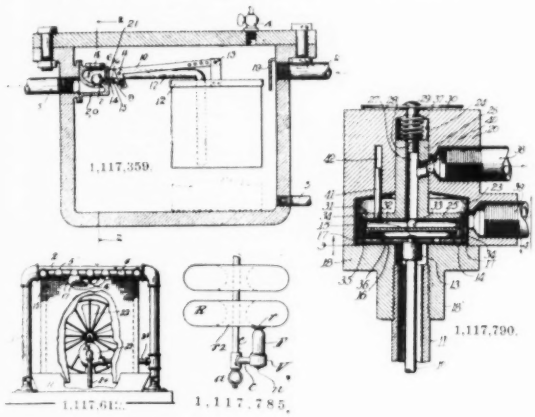
1,117,922. Air-Cooling Device. Otto Sterkel, Ravensburg, Germany. An air-cooling device comprising, in combination, an inner refrigerating receptacle, an outer heat-insulating casing and spaced somewhat therefrom to form a narrow space around said receptacle, through which the air to be cooled and dried is adapted to pass, a dish supported within said casing beneath said receptacle, a downwardly enlarging end piece at the lower end of said casing, and a valve intermediate said casing and end piece.



1,117,359. Steam Trap. Robert T. Evans and Walter G. Nord, Youngstown, Ohio. In a mechanism of the class described, the combination with a liquid drain chamber provided with a removable cover and having inlet and outlet openings; of a second and smaller chamber removably attached within said drain chamber about such discharge opening and adjacent to said cover; valve mechanism disposed within said second chamber and adapted to control such discharge opening, said valve mechanism comprising a movable ball and seat therefor; a runway mounted in said second chamber adjacent said valve seat and inclined toward the same; said second chamber having inlet and discharge openings; a pipe attached to such inlet opening in said second chamber and extending outward and downward in said first-named chamber; a lever pivotally mounted upon said second chamber and adapted to actuate said ball valve; and an open bucket float attached to lever and actuated by the liquid level in said first-named chamber, said pipe extending within said bucket.

1,117,612. Ventilating and Air-Cooling System. Carl S. Thompson, Dallas, Tex. In a device of the character described, the combination of a pair of vertical pipe members with a horizontal reservoir, a pair of horizontal rod members, vertical rod supports for the horizontal

members, a casing carried by the rod members and covering the structure, rods arranged to support a plurality of water screens, horizontal tubes carried by the reservoir, a plurality of apertures in the tubes, a rod beneath the tubes, conically shaped spray members carried by the rod and partly closing the apertures.



1,117,785. Means for Humidifying Artificially-Heated Air. Addison A. Cardwell, Rye, N. Y. A humidifying attachment for radiators, comprising a casing with means for attachment to the air vent of a radiator, a pipe leading from said casing, an absorbent medium supported by said pipe and arranged to be moistened by the fluids issuing therefrom and exposed to the atmosphere and to the heat from the radiator and so formed as to offer substantially no resistance to the fluids issuing from said pipe, and a reservoir for volatile material communicating with said pipe between said absorbent medium and the end of pipe farthest from its connection with said vent.

1,117,790. Temperature Controlled Fuel Regulator. Leo M. Chapman, Chicago, Ill. A device of the character described comprising a relatively long heat responsive expansible member; a support for the remote end of said member, its proximate end secured to the casing, said support having a lower co-efficient of expansion than said member; a valve part, movable by said member; a casing inclosing said valve part; another co-operating valve part in said casing, yieldingly movable in axial direction with reference to the said expansible member, to compensate for undue expansion thereof said co-operating valve part having a hollow stem provided with a port, and communicating openings the one registering with the ported valve stem and the other with said casing for fuel conducting pipes, said communication adapted to be closed by said valve when said expansible member has been sufficiently elongated by increase of temperature.

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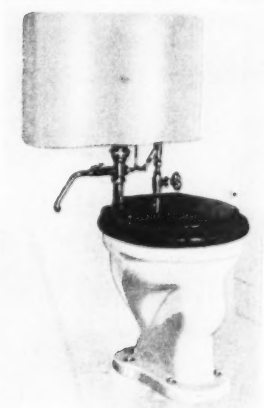

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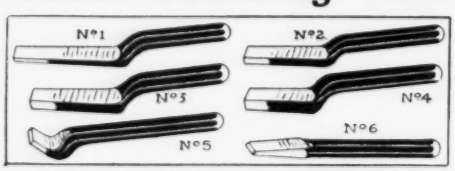

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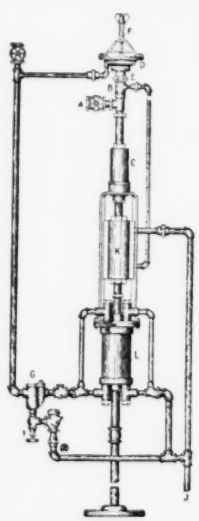

used in connection with heating system equipped with air lines on either new or old work, assembled as shown in cut and tested, before shipping, has and is winning the confidence of the heating trade. Reason, the pump as shown has no leather packing in either motor or air cylinder but is provided with phosphor bronze rings, and cast casings, the connection to and from the pump have ground Union joints. It may be to your interest to investigate.

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